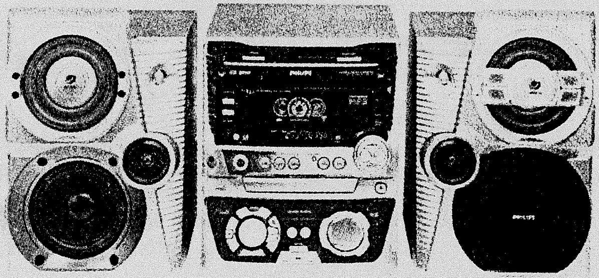
32 928

CDR Mini System

FW-R55/21/22/37

FW-R33/37

Service
Service
Service



Service Manual

SERVICING

For servicing the FW-R33 and FW-R55 the set has to be divided into two parts:

ReWritable CD COMPATIBLE

COMPACT disc DIGITAL AUDIO

1. Except for the CD-R/W module all workshops can repair the set on component level.
2. The CD-R/W module can only be repaired on component level with the help of ComPair. With this tool diagnosing of the set can be done in an interactive way. In the tool also the adjustment procedure has been implemented. The adjustment is absolutely necessary in case the CDR Main Board and/or CD drive (CDR Loader) is disconnected from the matched production combination.
   Only designated workshops can perform these repairs!
   Please send the complete set to the designated workshop.

COMPACT disc DIGITAL AUDIO Recordable ReWritable

Available circuit descriptions:	The Basics of Compact Disc Recordable/Rewritable	4822 725 25242
	3rd generation Compact Disc Recording (with reference to description of the Basic Engine)	3104 125 40100
	2nd line Service Manual CDR Mozart Module	3122 785 60030

Table of Contents

Technical specification 1-2
Measurement setup 2-1
RC-5 codes. 2-2
Warnings & Safety 2-3
Service Testprogram 3-3
Service Hints 3-1
Location of printed circuit boards 3-2
Dismantling Instructions 3-3
Service Testprogram 3-14
Wiring Diagram. 4-1
Blockdiagram 5-1

Front Board 6
- *Microphone Board* 6-2
- *Headphone Board*. 6-9
- *Digital In Board* 6-9
- *CDR Lightguide* 6-9
- *3CDC-Key Board* 6-9

Tuner Board 7

Audio Frequency Board (AF9) 8

Power Board. 9

3 Disc Changer Module. 10

CD R/W Module 11

Exploded view of set 12
Partslist of set 12

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**CLASS 1
LASER PRODUCT**

Published by HB 0138 Service Audio Printed in The Netherlands Subject to modification

GB 3103 785 25110

PHILIPS

Technical Specification

General:

Mains voltage : 120 / 240V switchable (for /21)
: 230V (for /22)
: 120V (for /37)
Mains frequency : 50 ~ 60Hz
Power consumption : 85W at 1/8 P_{RATED}
: 350W at max output
: ≤15W at Stand by
: ≤2W at ECO Stand by

Tuner:

FM
Tuning range : 87.5MHz - 108MHz
Grid : 100kHz
IF : 10.7MHz
Aerial input : 75Ω
Sensitivity Mono (26dB S/N) : < 22dBf (typ. 16dBf)
d (RF=1mV,Δf=75kHz) : < 3% (typ. 1%)
IF rejection : > 60dB
Image rejection : > 25dB
-3dB Limiting Point : < 23.5dBf (typ. 15dBf)

MW
Tuning range : 531kHz - 1062kHz
Grid : 9kHz
IF : 450kHz ±1kHz
Sensitivity at 26dB S/N : < 4400µV/m
d (RF=50mV,m=80%) : < 5% - typ. 3%
IF rejection : > 45dB
Image rejection : > 28dB

Amplifier:

Output power : 2 x 55W at 6Ω
Headphone : 3.5mm stereo jack
Frequency response : 20Hz - 20kHz (-3dB) Limit
Equalizer : Digital Sound Control

Input sensitivity
Aux/Line : 500mV ±2dB
Microphone : 2.5mV ±2dB at 1kHz

CDC unit:

Frequency response within : 20Hz - 20kHz at ±1.5dB
Signal/Noise ratio : > 88dB (A-weighted)
Distortion at 1kHz,0dB : -80dB
Channel unbalance : < 0.3dB
Channel crosstalk at 1kHz : -75dB
De-emphasis : 0 or 15/50 µS
Laser
Output power : ≤500µW
Wave length : 780nm ±20nm

CDR unit:

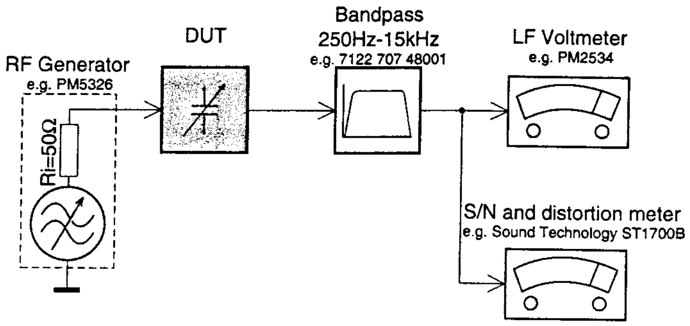
CD Playback:
Frequency response within : 20Hz - 20kHz at ±1.5dB
Signal/Noise ratio : > 88dB (A-weighted)
Distortion at 1kHz,0dB : -80dB
Channel unbalance : < 1dB
Channel crosstalk at 1kHz : -75dB
De-emphasis : 0 or 15/50 µS

Analog recording - digital playback:
Frequency response within : 20Hz - 20kHz at ±1.5dB
Signal/Noise ratio : > 81dB (A-weighted)
Distortion at 1kHz,0dB : -78dB
Channel unbalance : < 1dB
Channel crosstalk at 1kHz : -65dB
De-emphasis : 0 or 15/50 µS

Laser
Output power : ≤1mW during reading
: ≤20mW during writing
Laser class 3B
Wave length : 780nm ±20nm

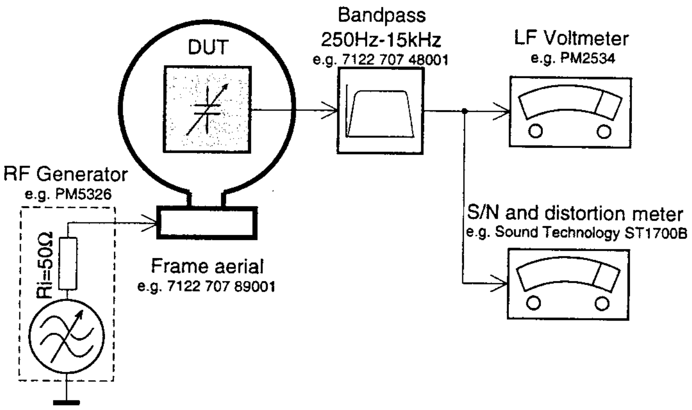
Measurement Setup

Tuner FM


Bandpass
250Hz-15kHz
e.g. 7122 707 48001
DUT
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

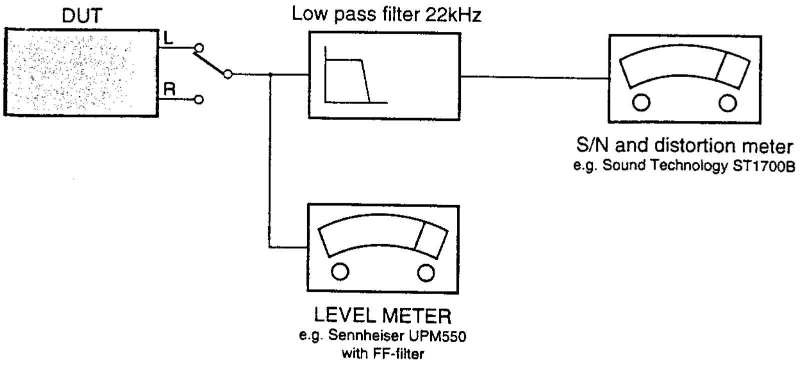
Tuner AM (MW,LW)


Bandpass
250Hz-15kHz
e.g. 7122 707 48001
DUT
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B
Frame aerial
e.g. 7122 707 89001

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.

CD

Use Audio Signal Disc SBC429 4822 397 30184 (replaces test disc 3)
L.P.F. = 13th order filter 4822 395 30204


DUT
L
R
Low pass filter 22kHz
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

RC5 Codes

Remote control key	*System Code*	*Command Code*	*Remote control key*	*System Code*	*Command Code*
Standby	17, 20, 21, 26	12	SLEEP	16	38
CD1	20	55	DIM	16	71
CD2	20	56	REPEAT	20, 26	29
CD3	20	57	SHUFFLE	20, 26	28
CDR	26	63	TRACK INCREMENT	26	114
Tuner	17	63	VOLUME +	16	16
Aux	21	63	VOLUME -	16	17
1 (ABC)	17,20, 21, 26	01	►	20, 26	53
2 (DEF)	17,20, 21, 26	02	❚❚	20, 26	48
3 (GHI)	17,20, 21, 26	03	⏮	17,20, 21, 26	33
4 (JKL)	17,20, 21, 26	04	⏭	17,20, 21, 26	32
5 (MN)	17,20, 21, 26	05	◄◄ **CD, CDR MODE**	20, 26	50
6 (OPQ)	17,20, 21, 26	06	◄◄ **AUX, TUNER MODE**	17, 21	31
7 (RST)	17,20, 21, 26	07	►► **CD, CDR MODE**	20, 26	52
8 (UVW)	17,20, 21, 26	08	►► **AUX, TUNER MODE**	17, 21	30
9 (XYZ)	17,20, 21, 26	09	■	20, 26	54
0 (Space)	17,20, 21, 26	00	INCREDIBLE SURROUND	16	64
YES	17,20, 21, 26	87	PURE	16	52
NO	17,20, 21, 26	49	LOUDNESS	16	50
EDIT (TEXT)	17,20, 21, 26	82	BALANCE L	16	27
PROGRAM	20, 26	36	BALANCE R	16	26
PROGRAM **TUNER MODE**	17	122	WOOX	16	70
MUTE	16	13	WOOX LEVEL	16	118
TIMER ON/OFF	16	89			

Warnings & Safety

(GB) WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

(F) ATTENTION

Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

ESD

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING

Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delàpparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB) AVAILABLE ESD PROTECTION EQUIPMENT :

anti-static table mat large 1200x650x1.25mm	4822 466 10953
small 600x650x1.25mm	4822 466 10958
anti-static wristband	4822 395 10223
connection box (3 press stud connections, 1MΩ)	4822 320 11307
extendible cable (2m, 2MΩ, to connect wristband to connection box)	4822 320 11305
connecting cable (3m, 2MΩ, to connect table mat to connection box)	4822 320 11306
earth cable (1MΩ, to connect any product to mat or to connection box)	4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)	4822 310 10671
wristband tester	4822 344 13999

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

SAFETY

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

(I)

Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

(GB) **DANGER**: Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.

CLASS 1
LASER PRODUCT

(S) Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(DK) Advarsel !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

(FIN) Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

(GB)

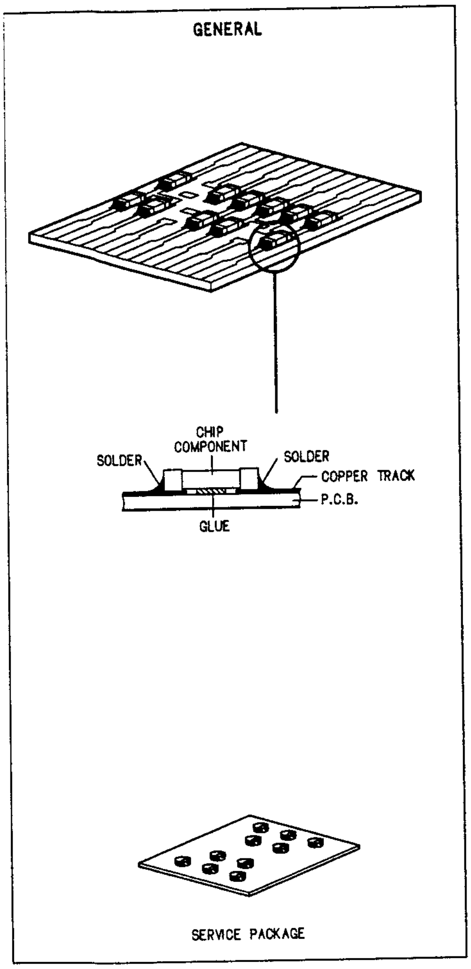
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

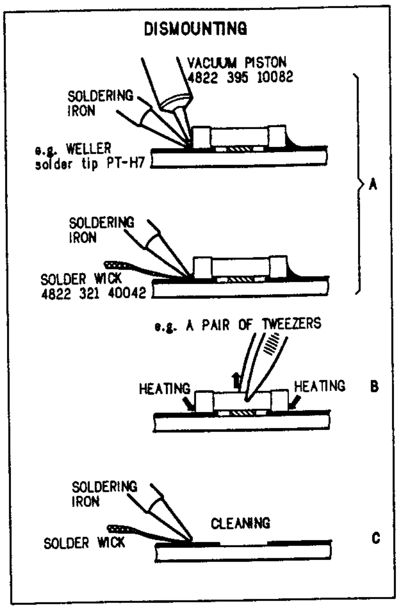
(F)

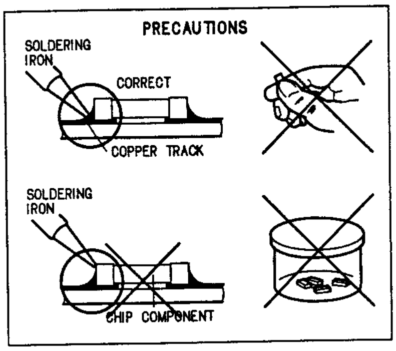
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

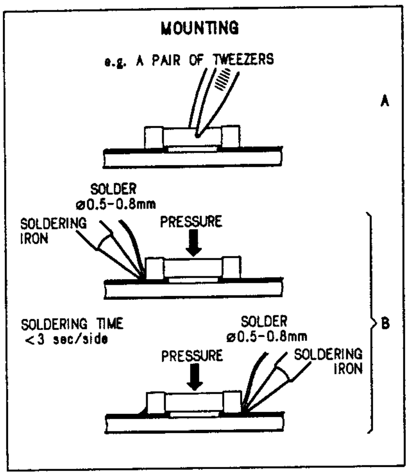
Service hints

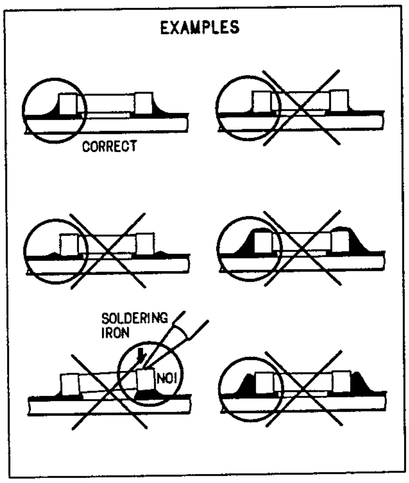
Handling chip components


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE


DISMOUNTING
VACUUM PISTON
4822 395 10082
SOLDERING IRON
e.g. WELLER solder tip PT-H7
A
SOLDERING IRON
SOLDER WICK
4822 321 40042
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
CLEANING
SOLDER WICK
C


PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT


MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
ø0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
<3 sec/side
SOLDER
ø0.5-0.8mm
PRESSURE
SOLDERING IRON
B


EXAMPLES
CORRECT
SOLDERING IRON
NO!

Service Tools

TORX T10 screwdriver with shaftlength 150mm	4822 395 50423
TORX screwdriver set SBC 163	4822 295 50145
Audio signal disc SBC 429	4822 397 30184
Playability test disc SBC444	4822 397 30245
Test disc 5 (disc without errors) +	
Test disc 5A (disc with dropout errors, black spots and fingerprints) SBC 426/426A	4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30dB level without "pause")	4822 397 30155

Escape from „Dealer Mode“

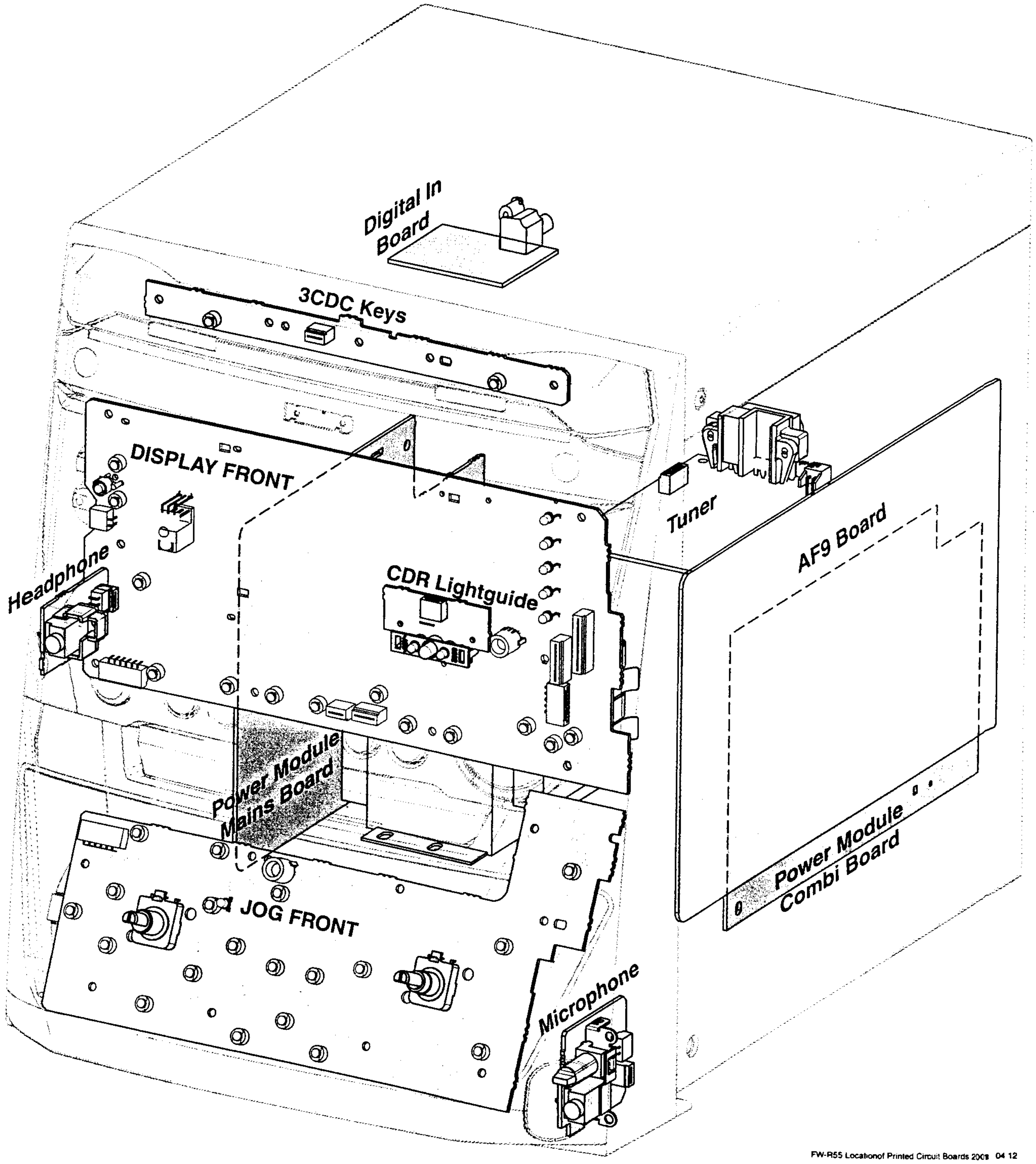
The sets are equipped with a special DEALER MODE.
This mode blocks the trays of the CDC - and CDR module to prevent customers from fetching out CDs from exhibition sets.
The dealer mode can be switched on/off as follows:

1) Switch the set with the stanby-button to standby mode
2) Press the [DISPLAY] key for longer than 5s
   → Display shows „ TRAYS LOCKED“ respectively „ UNLOCKED“

Escape from „Demo Mode“

The demo mode displays various features of the set and will start automatically.
To cancel the demo mode keep „STOP“ button on the set pressed for at least 5 seconds.
The demo mode is cancelled permanently. The set switches to standby.

Location of Printed Circuit Boards

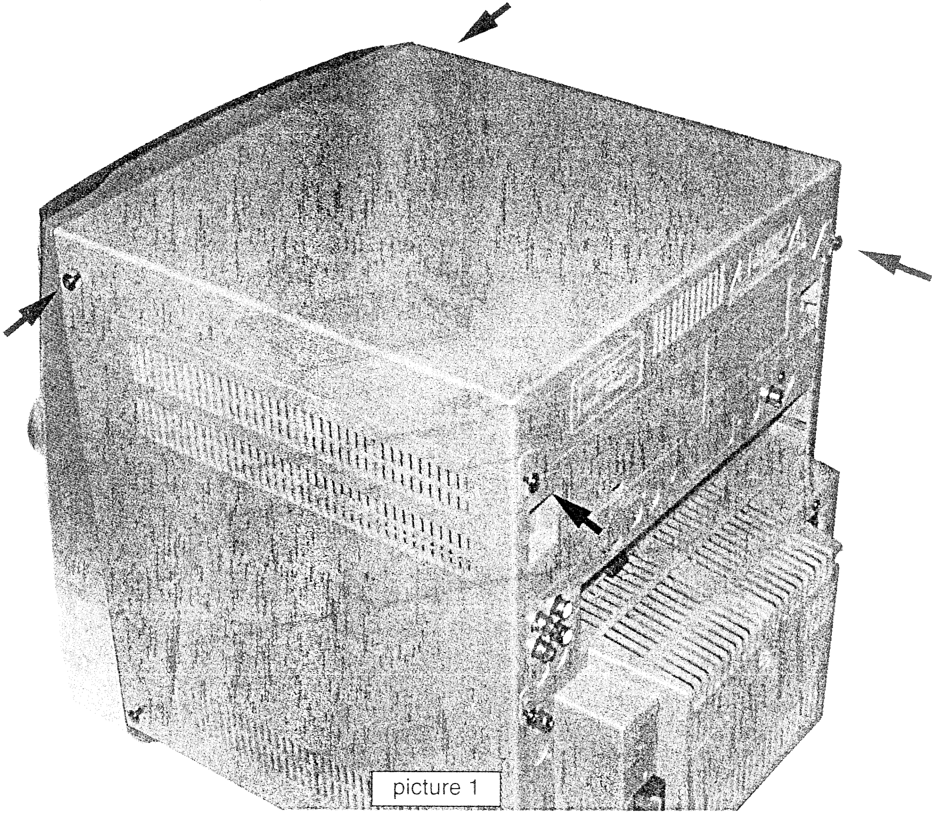

Digital In Board
3CDC Keys
DISPLAY FRONT
Headphone
CDR Lightguide
Tuner
AF9 Board
Power Module Mains Board
Power Module Combi Board
JOG FRONT
Microphone

FW-R55 Locationof Printed Circuit Boards 2001 04 12

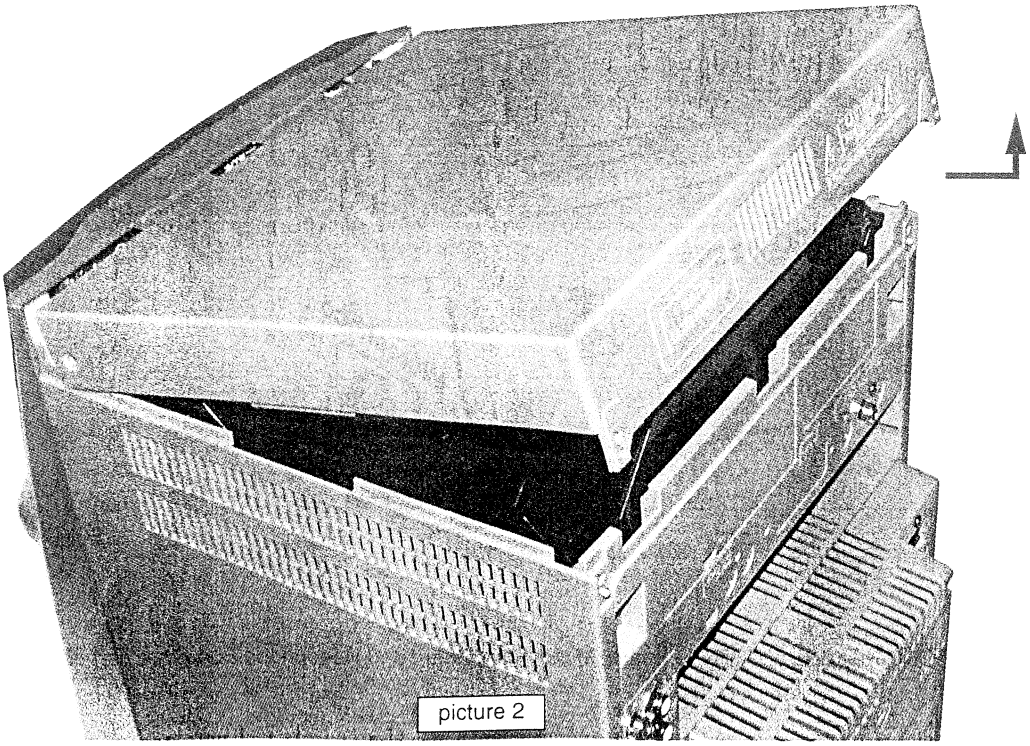
Attention:
CDR Lightguide, 3CDC-Key Board, Digital In Board, Microphone Board and Headphone Board are part of the Front Board.

Dismantling the *Top Cover*

- Remove 4 screws as shown in picture 1.
- Raise top cover at the rear and pull it backwards as shown in picture 2.



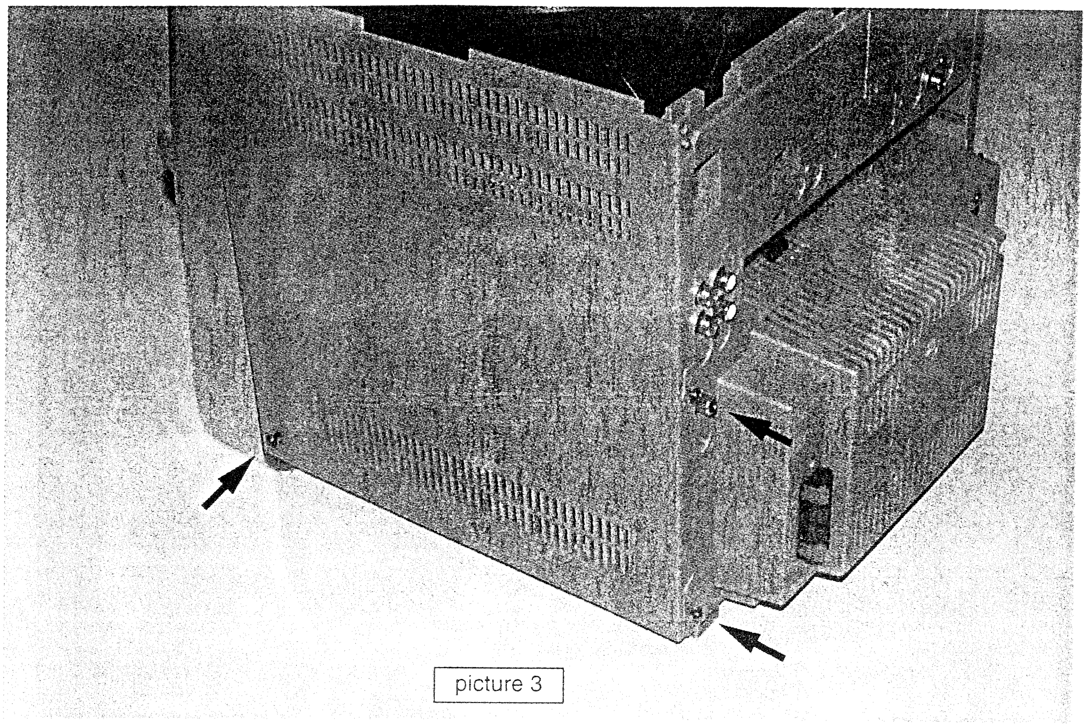
picture 1



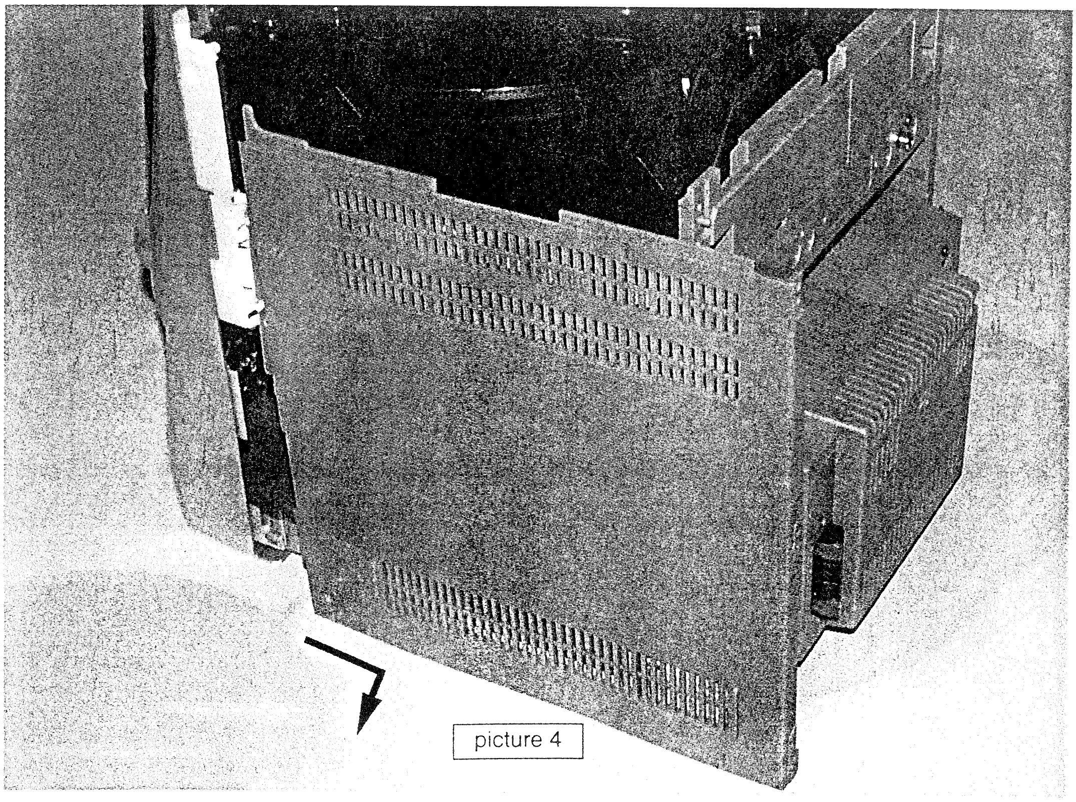
picture 2

Dismantling the *Side Cover*

- Remove 3 screws (for each side) as shown in picture 3.
- Remove side cover as shown in picture 4.



picture 3

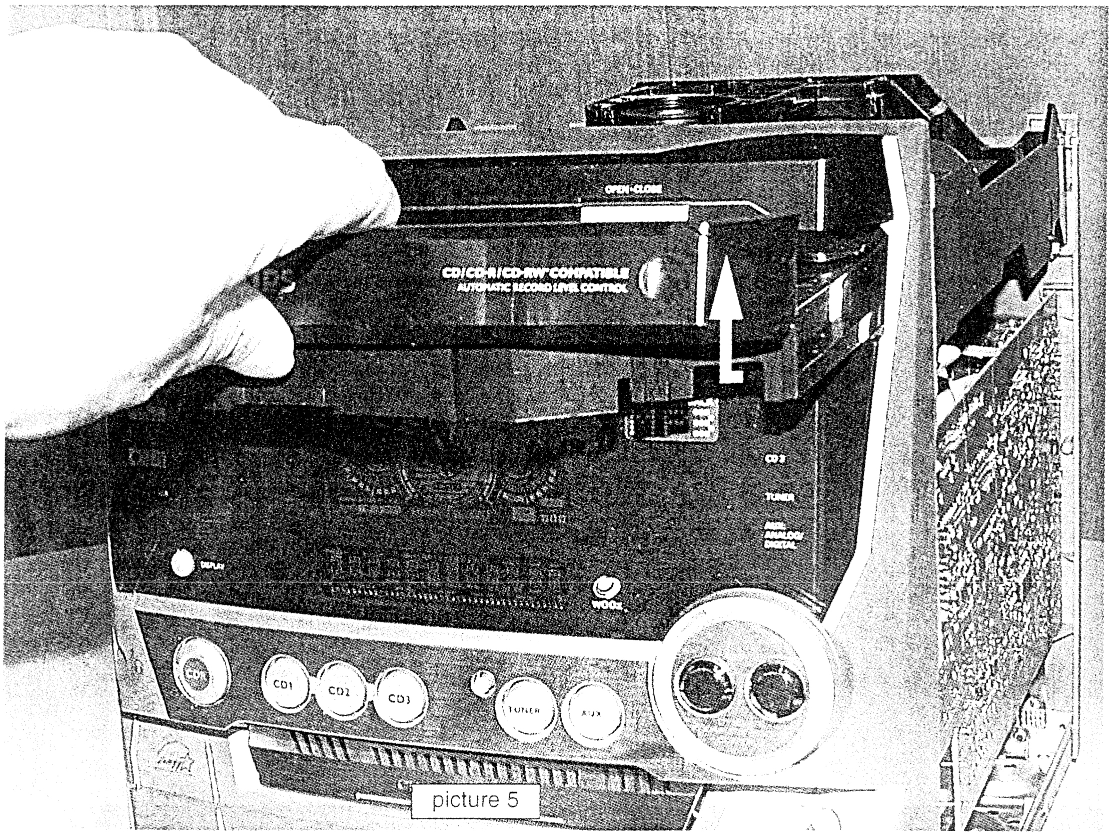


picture 4

Dismantling the *3CDC Module*

Remove the 3CDC Tray cover

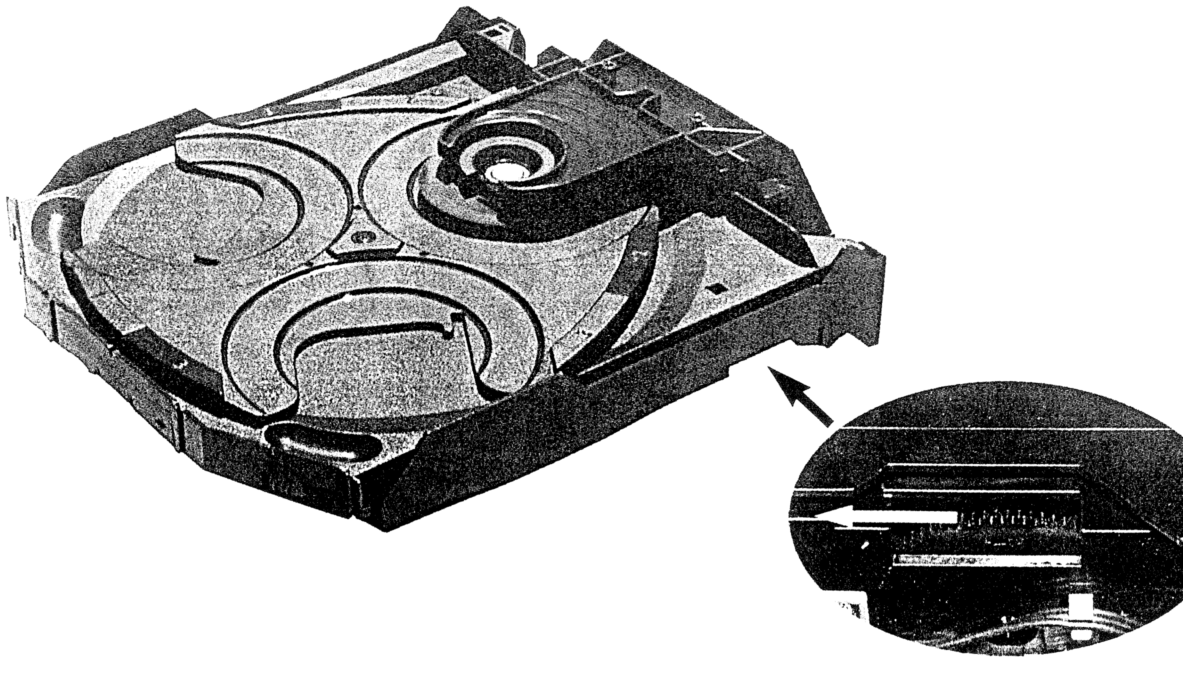
- To release the cover from the catch on the tray pull it frontwards on bottom side as shown in picture 5.
- Pull the cover up.


OPEN-CLOSE
CD/CD-R/CD-RW COMPATIBLE
AUTOMATIC RECORD LEVEL CONTROL
CD 3
TUNER
DISPLAY
CD1
CD2
CD3
TUNER
AUX

picture 5

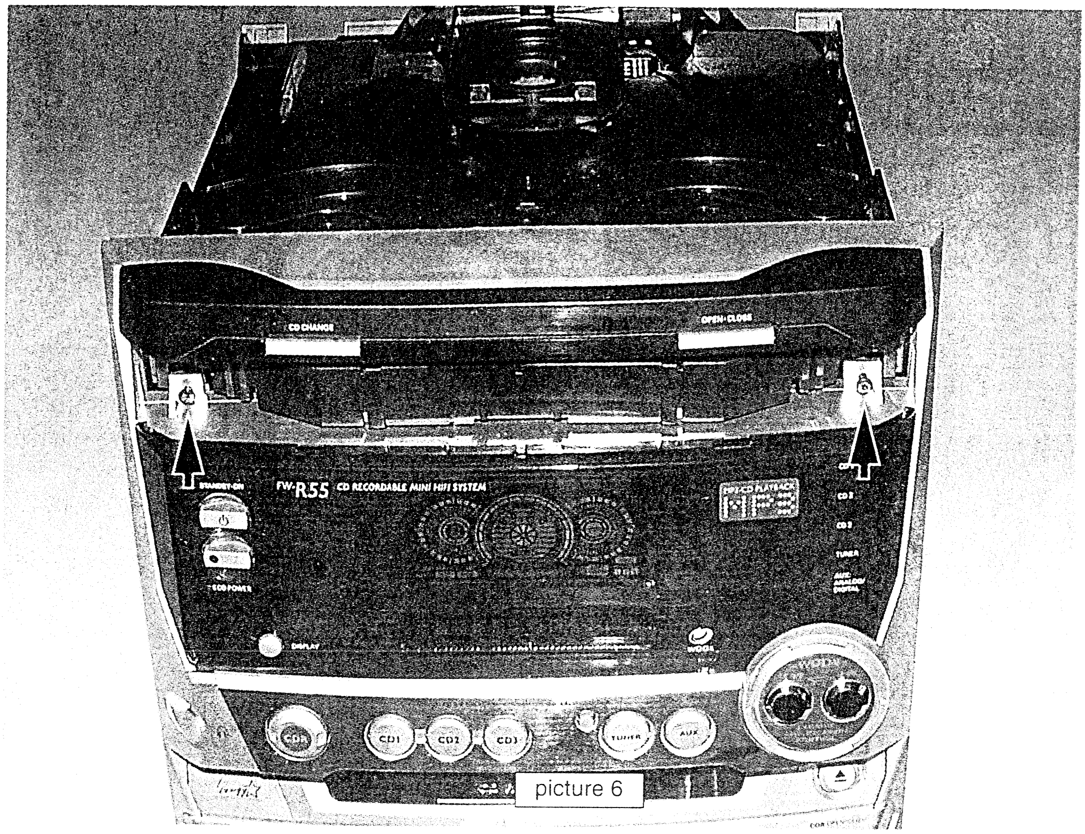
In case of a Supply fault, the tray can be opened manually.

- Turn gearwheel clockwise (as shown in picture below).

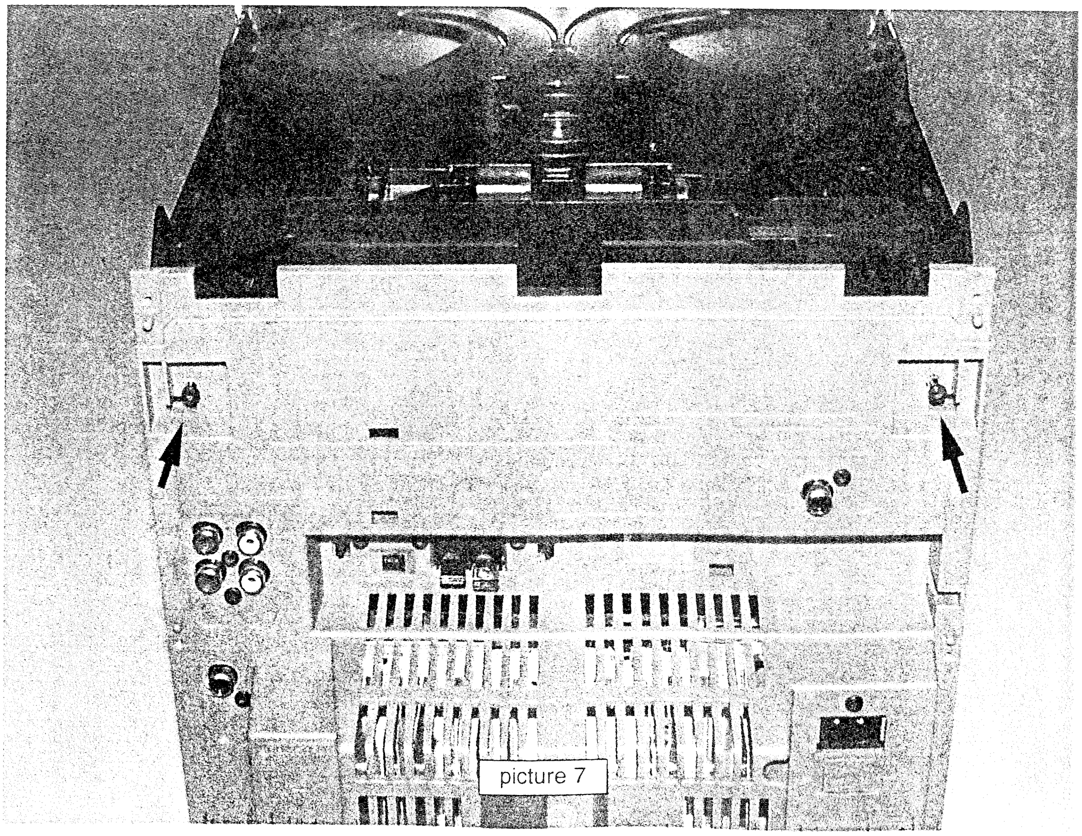


Dismantling the *3CDC Module* (continued)

- Remove 2 screws on front side first → see picture 6.
- Remove 2 screws on back side → see picture 7.


CD CHANGE
OPEN•CLOSE
FW-R55
CD RECORDABLE MINI HIFI SYSTEM
CD1
CD2
CD3
TUNER
AUX

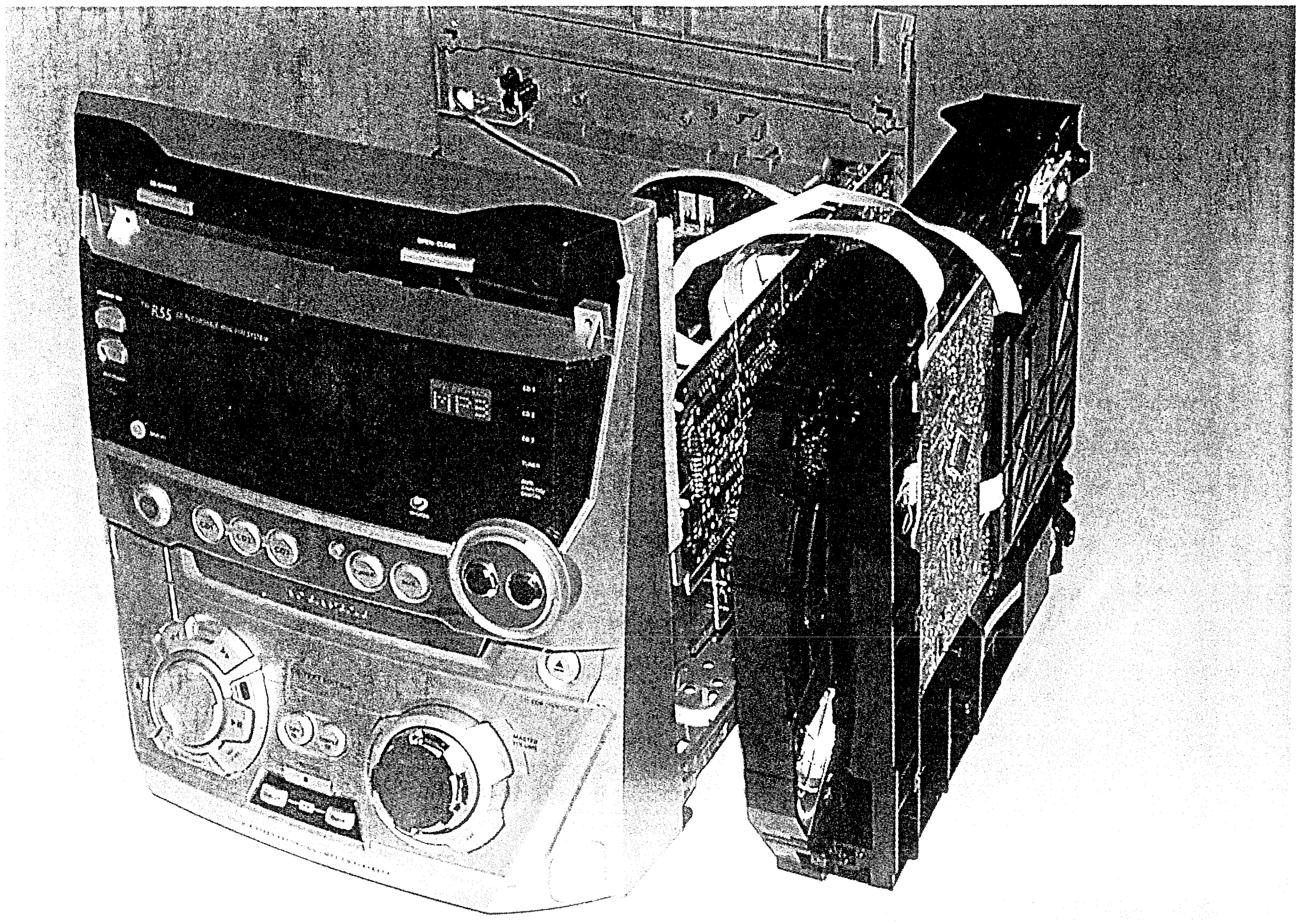
picture 6



picture 7

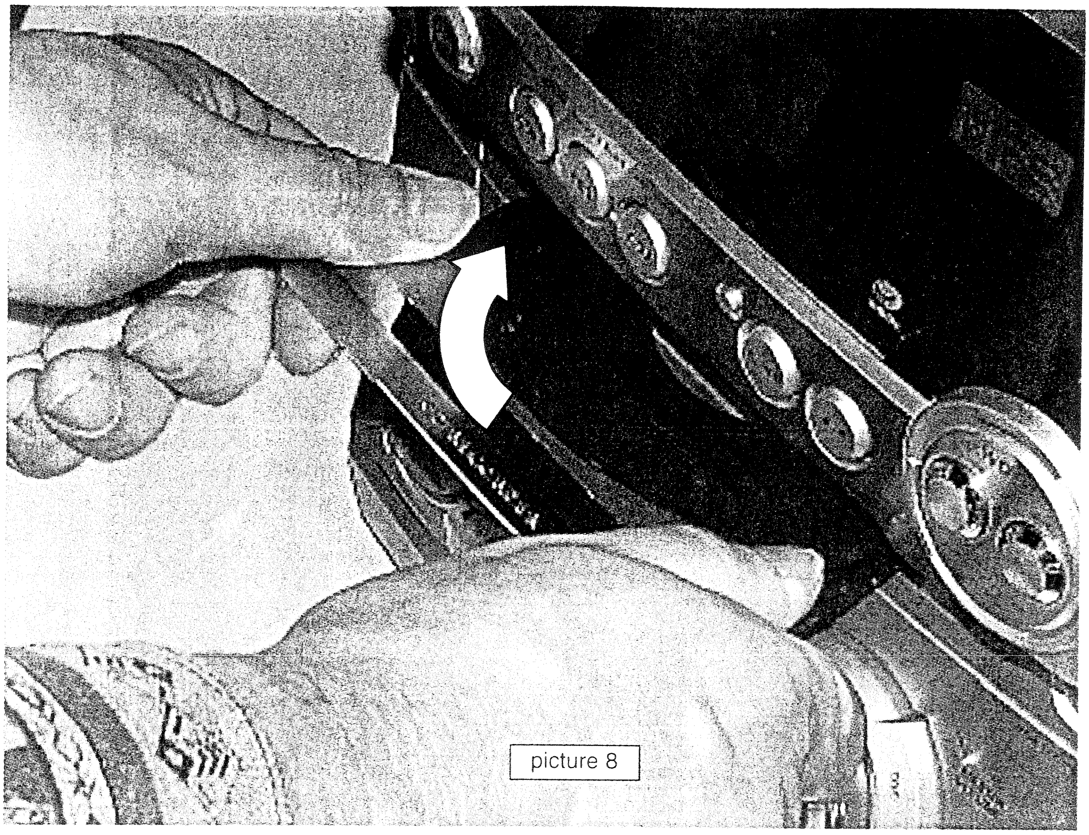
DISMANTLING INSTRUCTIONS

Repair position for the *3CDC Module*



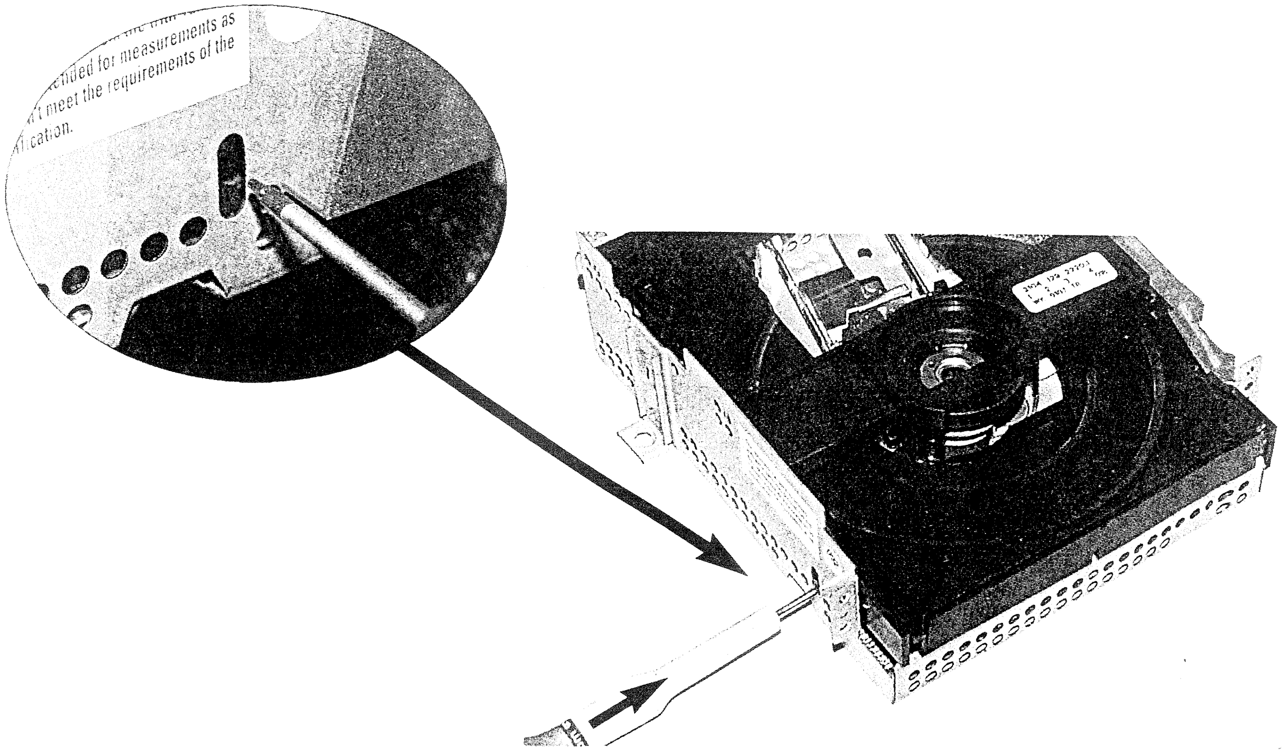
Dismantling the *CDR Module*

- Remove 3CDC module first. see previous pages
- Remove CDR Tray cover → see picture 8.



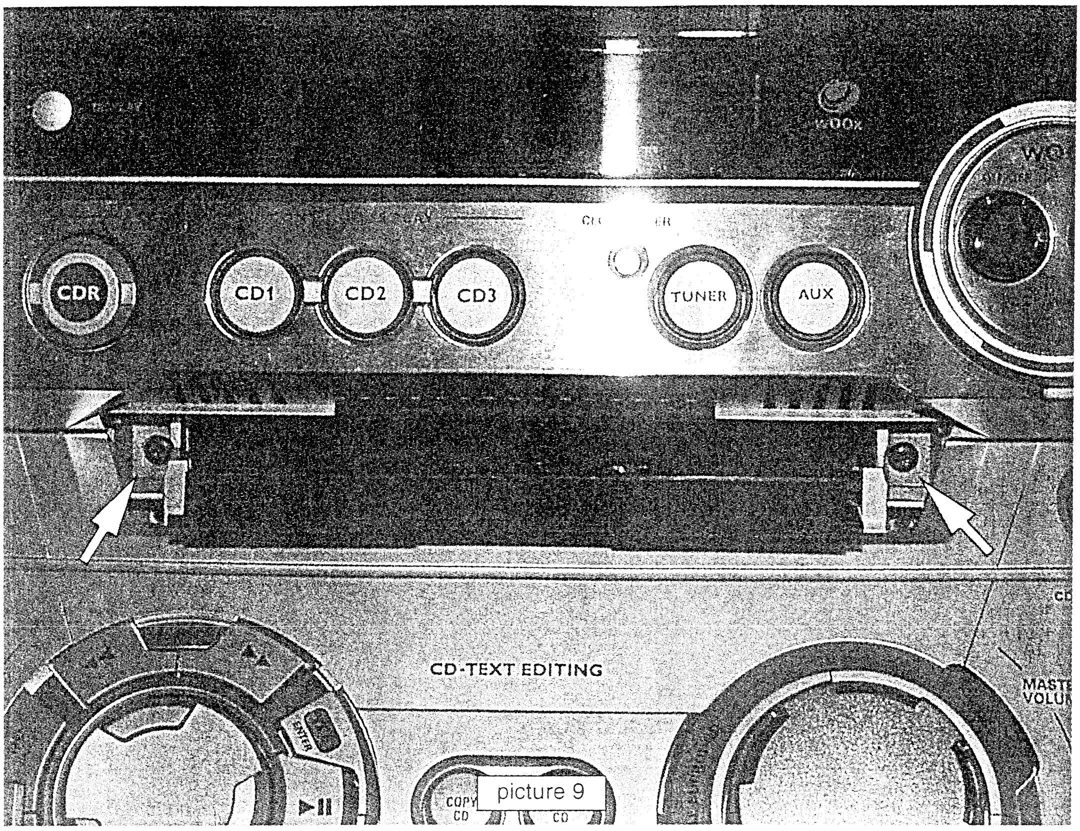
picture 8

In case of a Supply fault, the tray can be opened manually.
- Use a screwdriver to release the tray (as shown in picture below).

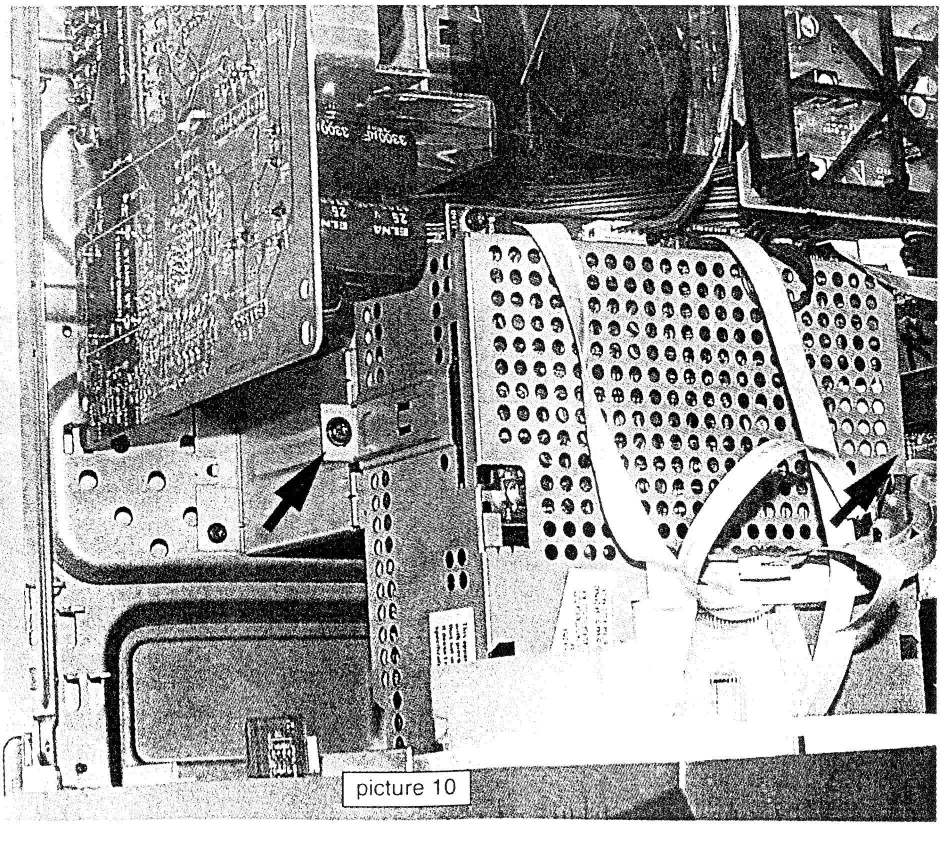

nded for measurements as
t meet the requirements of the
ication.

Ɔismantling the *CDR Module* (continued)

- Remove 2 screws on front side first → see picture 9.
- Remove screws on the left and the right side → see picture 10.


CDR
CD1
CD2
CD3
TUNER
AUX
CD-TEXT EDITING
COPY CD
CD

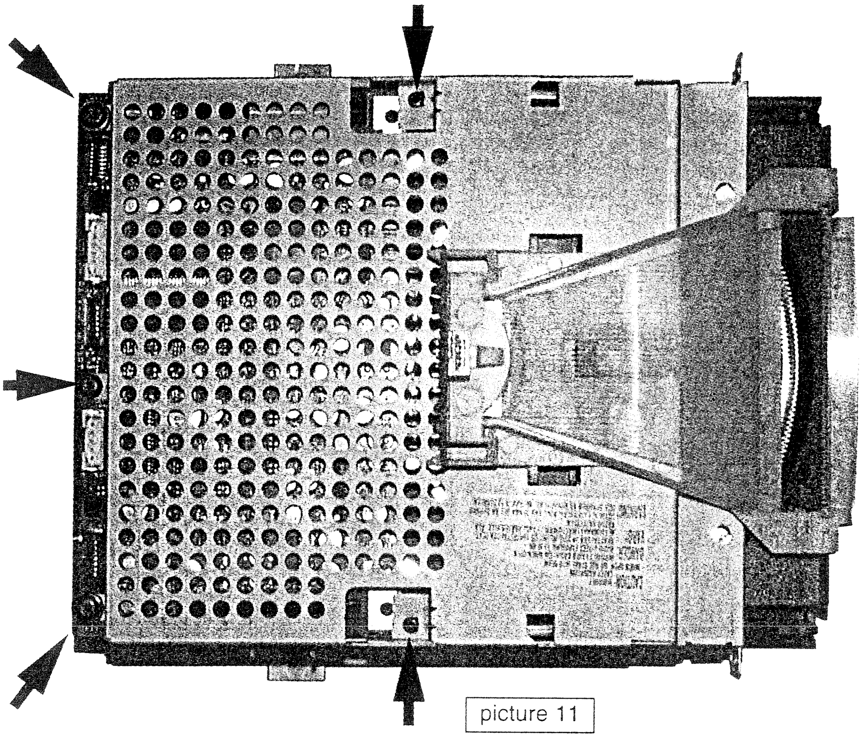
picture 9



picture 10

Dismantling the *CDR Module* (continued)

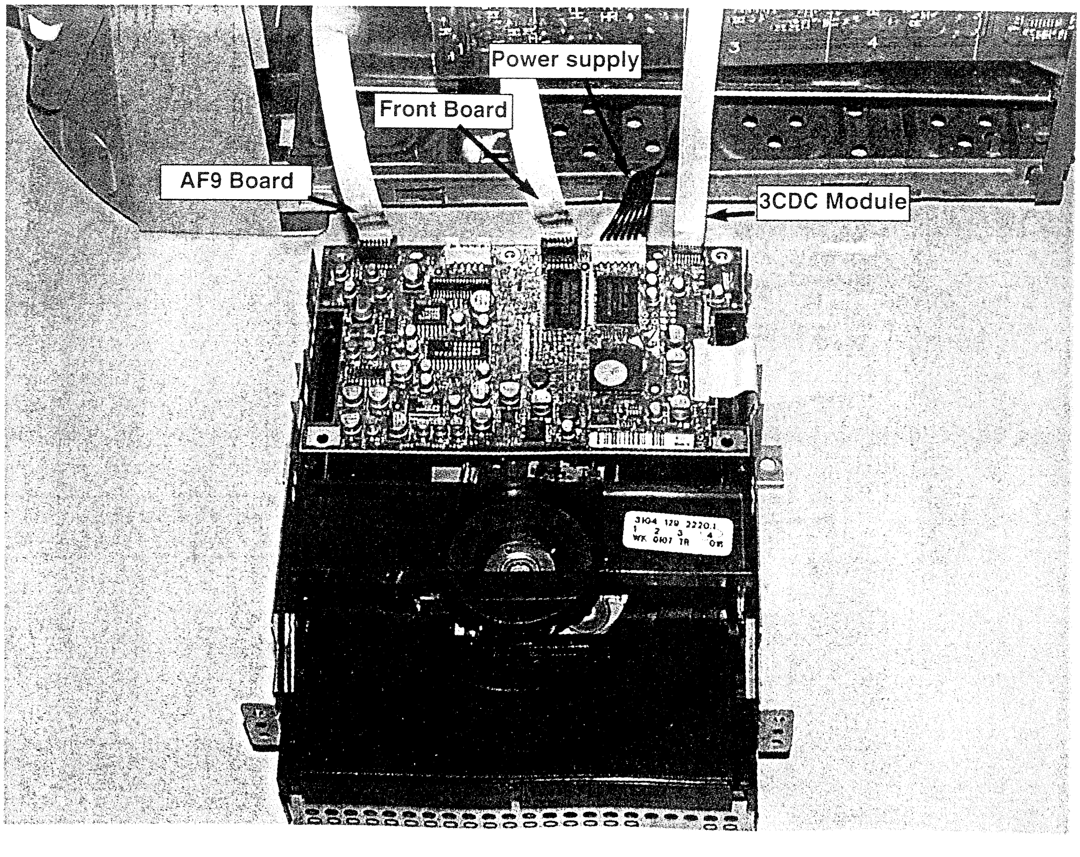
- Disconnect all wires and remove the module.
- Loosen screws shown in picture 11 and remove the top cover.



picture 11

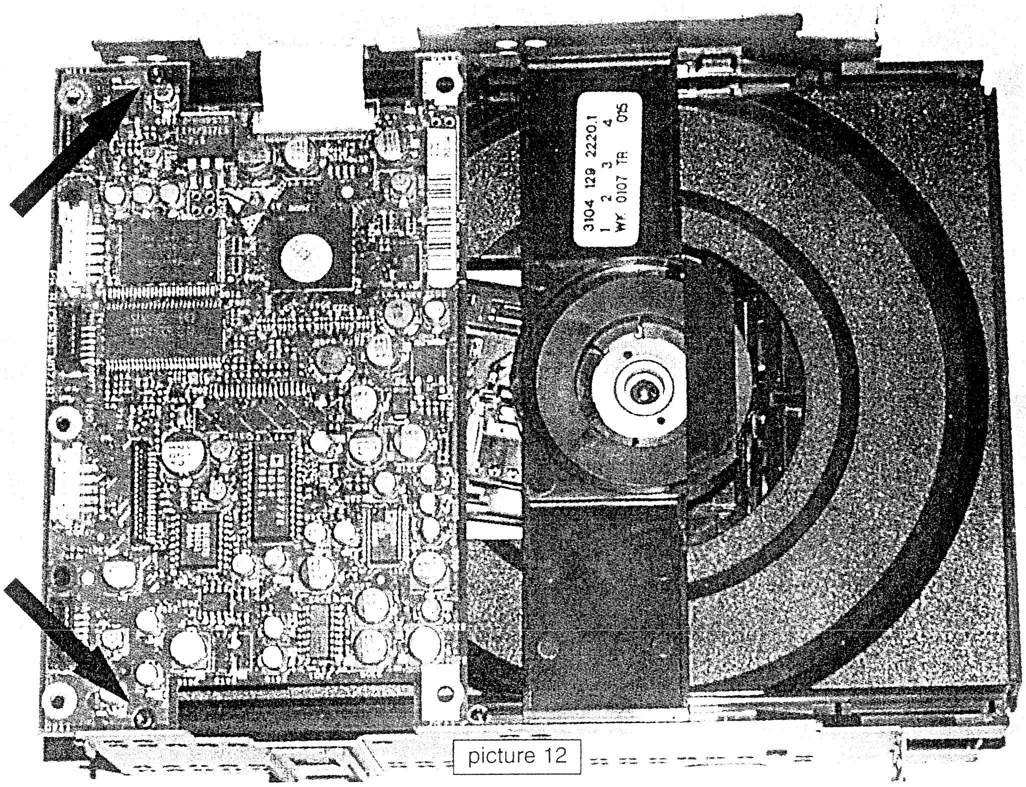
Repair position for the *Mozart Module*

- Connect Power, Front, AF9 Board and 3CDC Module to get an operating CDR Module


Power supply
Front Board
AF9 Board
3CDC Module

Dismantling the *CDR Module - Mozart Board* (continued)

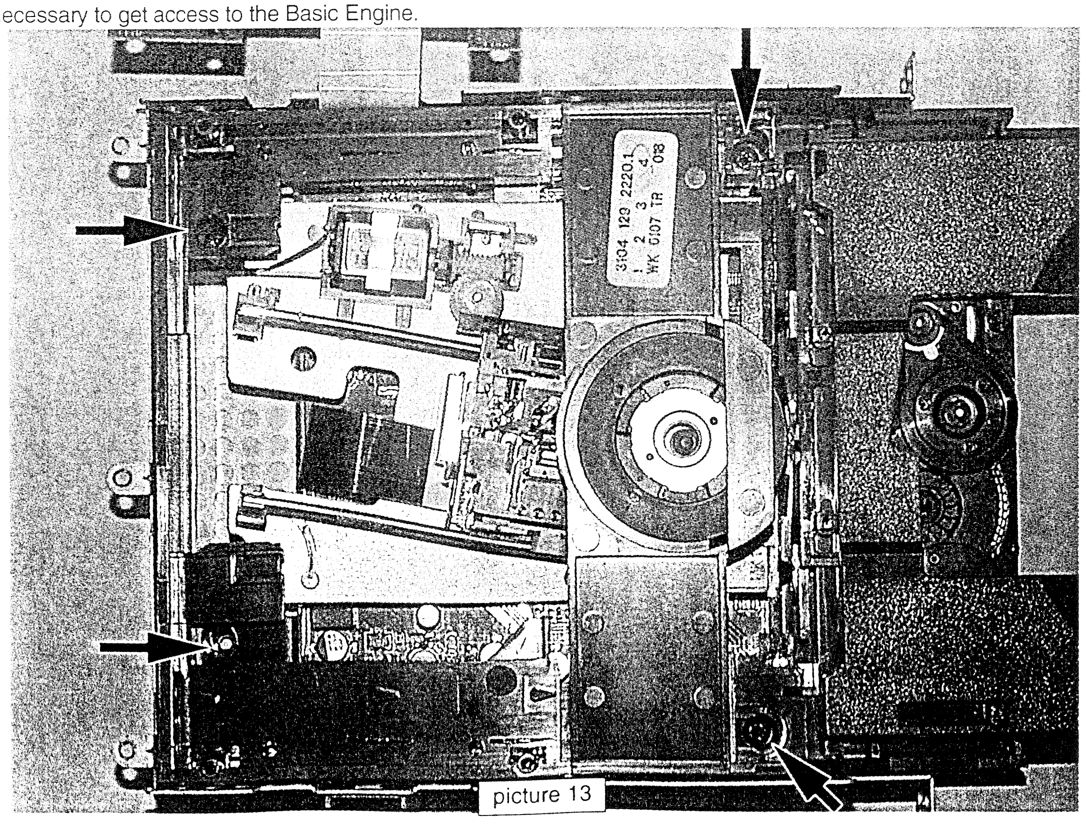
- Remove 2 screws as shown in picture 12 to get access to the other side or to dismantle the Mozart Board.


3104 129 2220.1
1 2 3 4
WK 0107 TR 015

picture 12

Repairs on Basic Engine

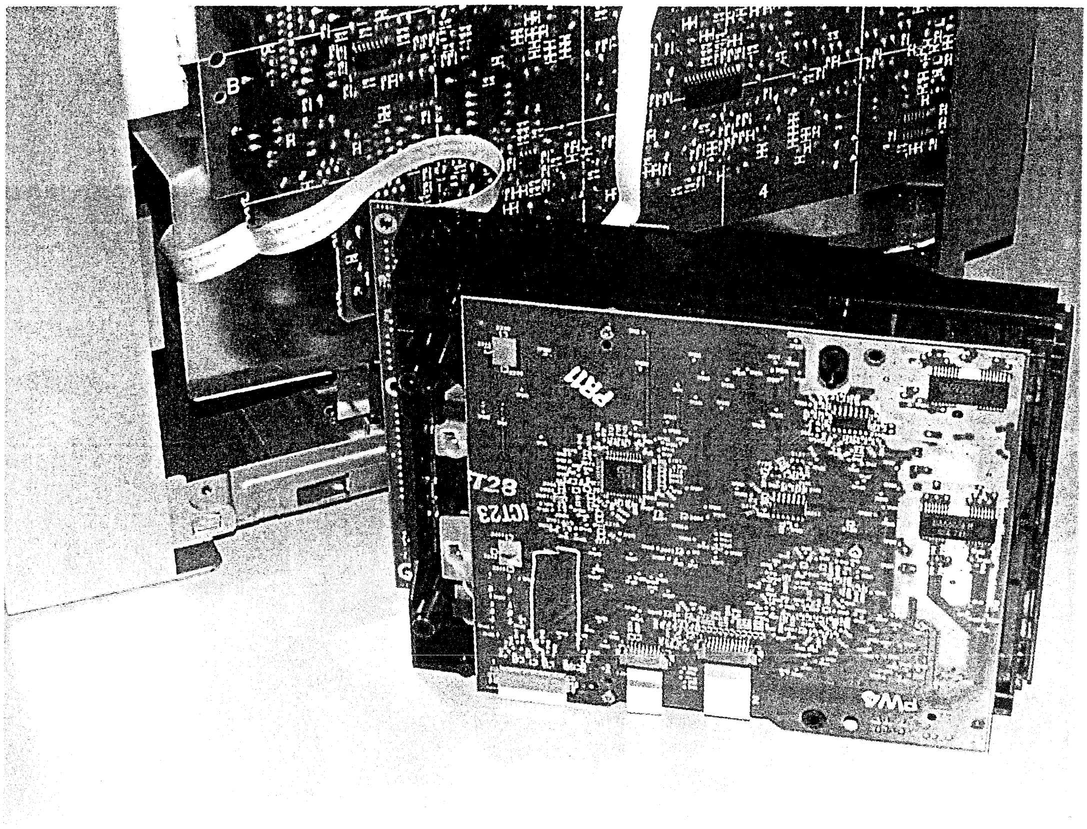
- Remove Mozart Board as described before.
- Open the tray.
- Remove 4 screws as shown in picture 13 to dismantle the module from the metal box. This is necessary to get access to the Basic Engine.


3104 129 2220.1
1 2 3 4
WK 0107 TR 018

picture 13

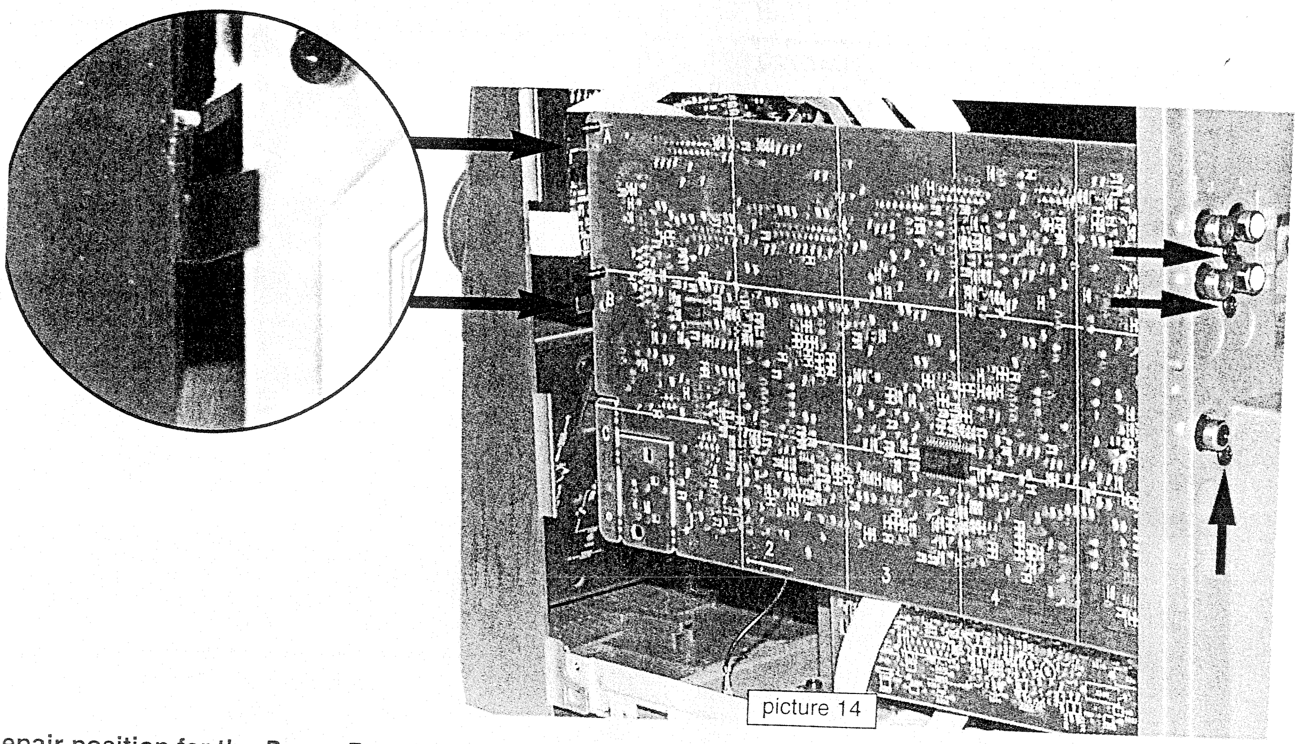
Repair position for the CDR Module - *Basic Engine*

- Connect Power, Front, AF9 Board and 3CDC Module to get an operating CDR Module



ismantling the *Audio Frequency Board*

Remove 3CDC module first. see chapter 3-5 to 3-7
Release two catches → see picture 14.
Remove 3 screws → see picture 14.

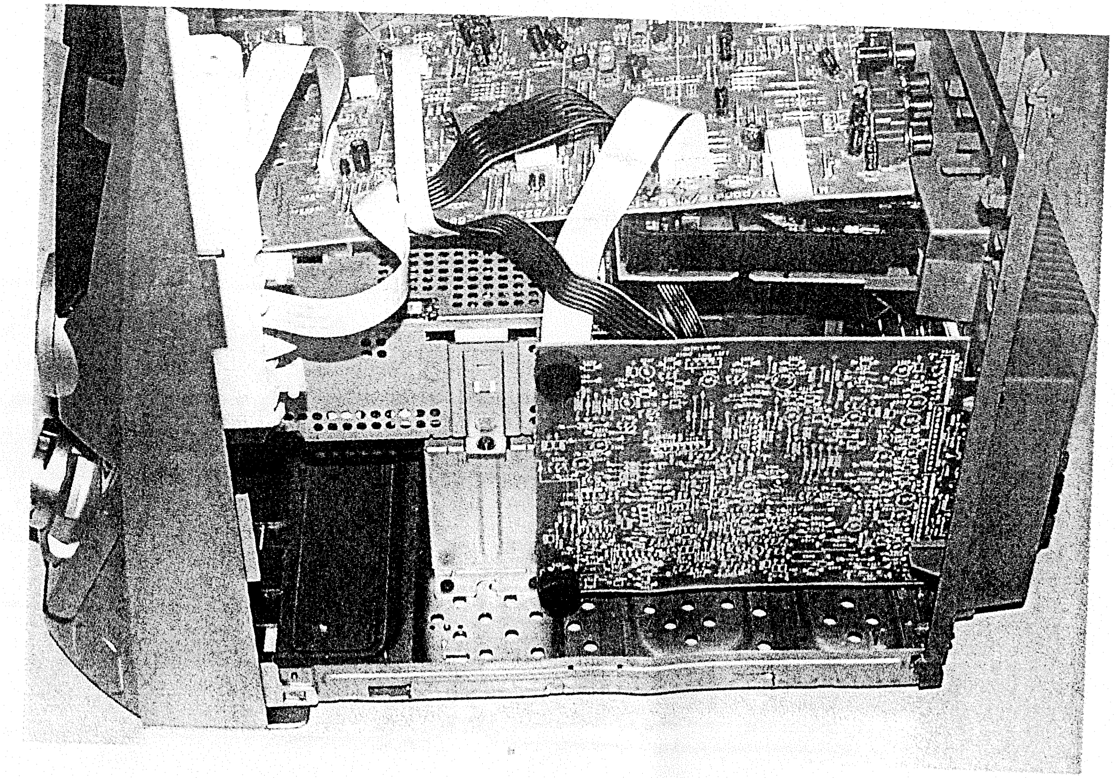


picture 14

epair position for the *Power Board*

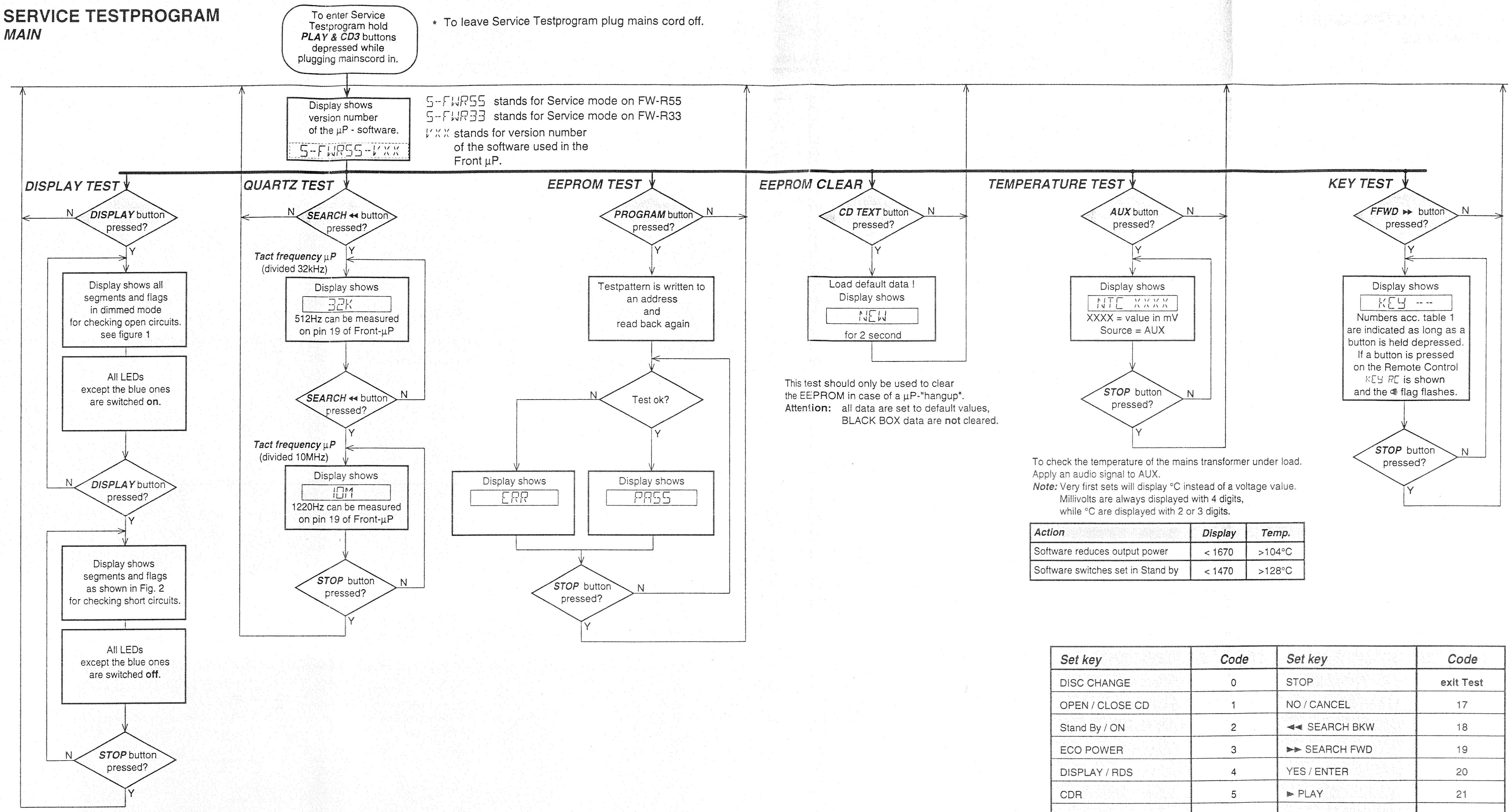
- Place the AF9 board on the CDR Module as shown in picture below.

⚠ **Use a sheet of cardboard inbetween to avoid shortcircuits!**



SERVICE TESTPROGRAM
MAIN

* To leave Service Testprogram plug mains cord off.


To enter Service Testprogram hold PLAY & CD3 buttons depressed while plugging mainscord in.
Display shows version number of the µP - software.
S-FWR55-VXXX
S-FWR55 stands for Service mode on FW-R55
S-FWR33 stands for Service mode on FW-R33
VXXX stands for version number of the software used in the Front µP.
DISPLAY TEST
DISPLAY button pressed?
N
Y
Display shows all segments and flags in dimmed mode for checking open circuits. see figure 1
All LEDs except the blue ones are switched on.
DISPLAY button pressed?
Display shows segments and flags as shown in Fig. 2 for checking short circuits.
All LEDs except the blue ones are switched off.
STOP button pressed?
QUARTZ TEST
SEARCH ◄◄ button pressed?
Tact frequency µP (divided 32kHz)
Display shows
32K
512Hz can be measured on pin 19 of Front-µP
SEARCH ◄◄ button pressed?
Tact frequency µP (divided 10MHz)
Display shows
10M
1220Hz can be measured on pin 19 of Front-µP
STOP button pressed?
EEPROM TEST
PROGRAM button pressed?
Testpattern is written to an address and read back again
Test ok?
Display shows
ERR
Display shows
PASS
STOP button pressed?
EEPROM CLEAR
CD TEXT button pressed?
Load default data ! Display shows
NEW
for 2 second
TEMPERATURE TEST
AUX button pressed?
Display shows
NTC XXXX
XXXX = value in mV Source = AUX
STOP button pressed?
KEY TEST
FFWD ►► button pressed?
Display shows
KEY --
Numbers acc. table 1 are indicated as long as a button is held depressed. If a button is pressed on the Remote Control KEY RC is shown and the ◄) flag flashes.
STOP button pressed?

This test should only be used to clear the EEPROM in case of a µP-"hangup".
Attention: all data are set to default values, BLACK BOX data are **not** cleared.

To check the temperature of the mains transformer under load.
Apply an audio signal to AUX.
Note: Very first sets will display °C instead of a voltage value.
Millivolts are always displayed with 4 digits,
while °C are displayed with 2 or 3 digits.

Action	***Display***	***Temp.***
Software reduces output power	< 1670	>104°C
Software switches set in Stand by	< 1470	>128°C

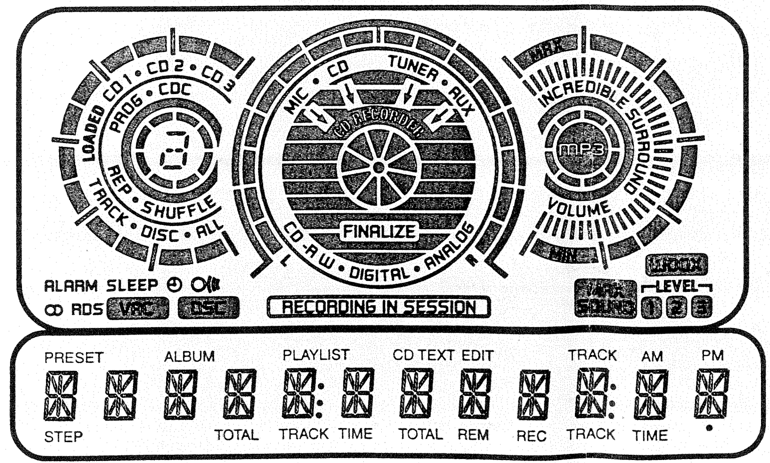

LOADED
PROG
CD 1
CD 2
CD 3
CDC
REP
SHUFFLE
TRACK
DISC
ALL
MIC
CD
TUNER
AUX
CD RECORDER
FINALIZE
CD-RW
DIGITAL
ANALOG
L
R
MAX
INCREDIBLE SURROUND
MP3
VOLUME
MIN
wOOx
LEVEL
1 2 3
ALARM SLEEP
RDS
VAC
DSC
RECORDING IN SESSION
MAX SOUND
PRESET
ALBUM
PLAYLIST
CD TEXT EDIT
TRACK
AM
PM
STEP
TOTAL
TRACK
TIME
TOTAL
REM
REC
TRACK
TIME

Fig. 1

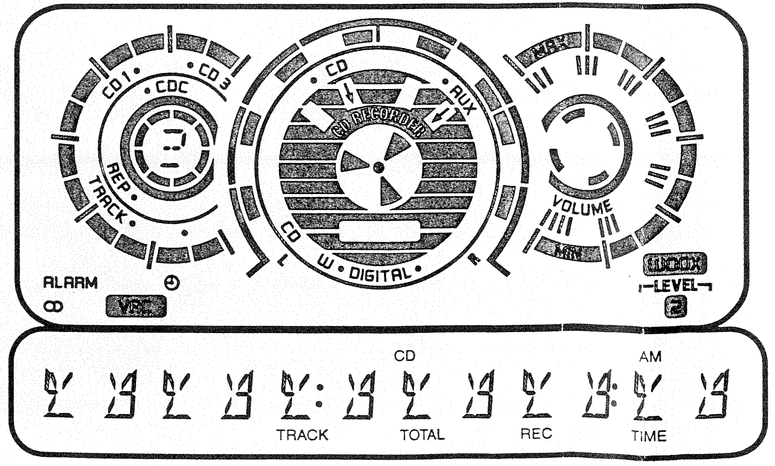
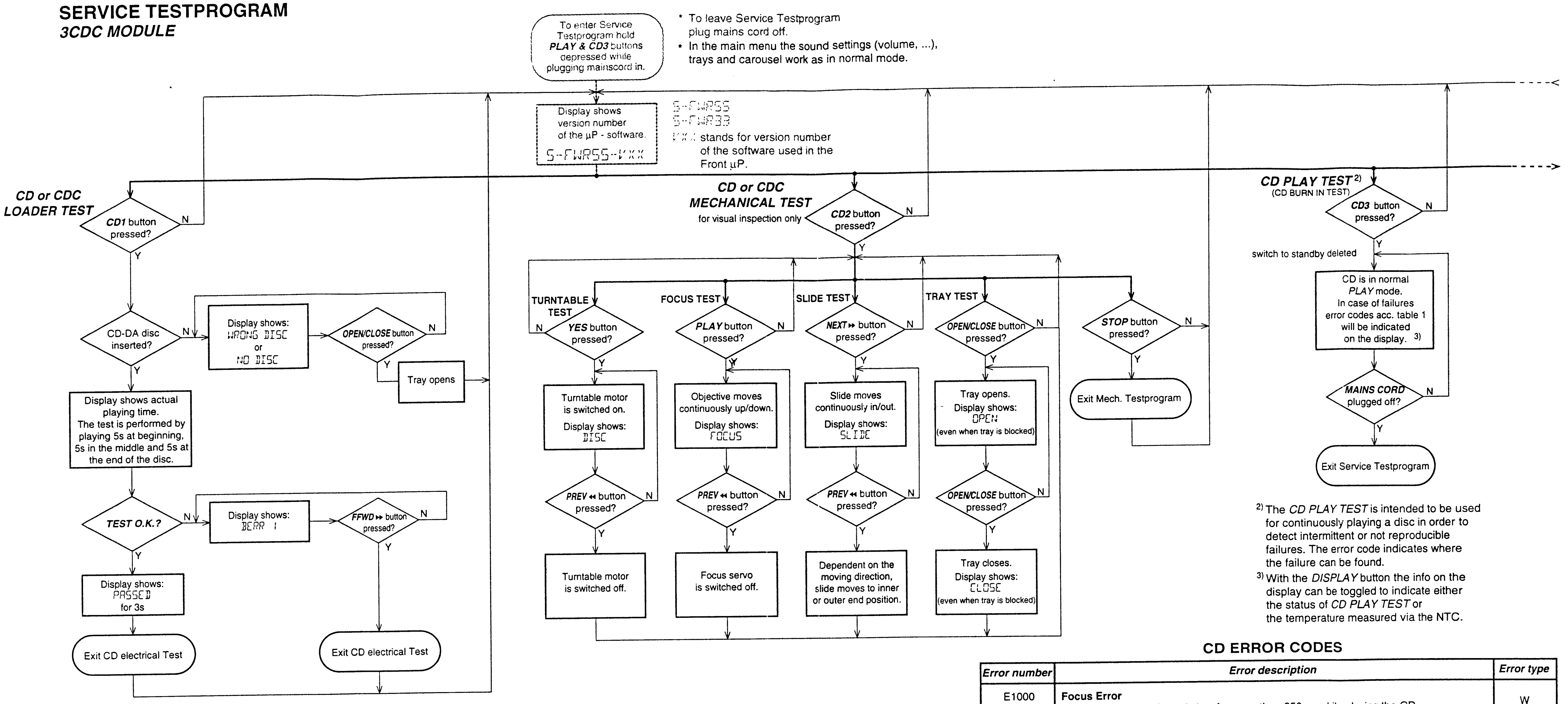

CD1
CD3
CDC
REP
TRACK
CD
CD RECORDER
AUX
W
DIGITAL
L
R
MAX
VOLUME
MIN
wOOx
LEVEL
2
ALARM
VAC
CD
AM
TRACK
TOTAL
REC
TIME

Fig. 2

Set key	*Code*	*Set key*	*Code*
DISC CHANGE	0	STOP	exit Test
OPEN / CLOSE CD	1	NO / CANCEL	17
Stand By / ON	2	◄◄ SEARCH BKW	18
ECO POWER	3	►► SEARCH FWD	19
DISPLAY / RDS	4	YES / ENTER	20
CDR	5	► PLAY	21
CD1	6	REC LEVEL	22
CD2	7	CD TEXT / EDIT	23
CD3	8	COPY CD	24
CLOCK / TIMER	9	COMPILE CD	25
TUNER	10	■ RECORD	26
AUX	11	FINALIZE	27
wOOx ON / OFF	12	ERASE	28
wOOx LEVEL for FW-R55 only	13	INCREDIBLE SURROUND	29
MAX SOUND for FW-R33 only	13	DSC	30
OPEN / CLOSE CDR	14	VAC	31
PROG	15		

Table 1

SERVICE TESTPROGRAM
3CDC MODULE


To enter Service Testprogram hold *PLAY & CD3* buttons depressed while plugging mainscord in.
Display shows version number of the µP - software.
S-FWR55-VXX
S-FWR55
S-FWR33
VXX stands for version number of the software used in the Front µP.
CD or CDC LOADER TEST
CD1 button pressed?
N
Y
CD-DA disc inserted?
N
Y
Display shows: WRONG DISC or NO DISC
OPEN/CLOSE button pressed?
N
Y
Tray opens
Display shows actual playing time. The test is performed by playing 5s at beginning, 5s in the middle and 5s at the end of the disc.
TEST O.K.?
N
Y
Display shows: ERR 1
FFWD ▸▸ button pressed?
N
Y
Display shows: PASSED for 3s
Exit CD electrical Test
Exit CD electrical Test
CD or CDC MECHANICAL TEST
for visual inspection only
CD2 button pressed?
N
Y
TURNTABLE TEST
FOCUS TEST
SLIDE TEST
TRAY TEST
YES button pressed?
PLAY button pressed?
NEXT ▸▸ button pressed?
OPEN/CLOSE button pressed?
STOP button pressed?
N
Y
Turntable motor is switched on. Display shows: DISC
Objective moves continuously up/down. Display shows: FOCUS
Slide moves continuously in/out. Display shows: SLIDE
Tray opens. Display shows: OPEN (even when tray is blocked)
Exit Mech. Testprogram
PREV ◂◂ button pressed?
OPEN/CLOSE button pressed?
Turntable motor is switched off.
Focus servo is switched off.
Dependent on the moving direction, slide moves to inner or outer end position.
Tray closes. Display shows: CLOSE (even when tray is blocked)
CD PLAY TEST 2)
(CD BURN IN TEST)
CD3 button pressed?
N
Y
switch to standby deleted
CD is in normal *PLAY* mode. In case of failures error codes acc. table 1 will be indicated on the display. 3)
MAINS CORD plugged off?
N
Y
Exit Service Testprogram

- To leave Service Testprogram plug mains cord off.
- In the main menu the sound settings (volume, ...), trays and carousel work as in normal mode.

[2] The *CD PLAY TEST* is intended to be used for continuously playing a disc in order to detect intermittent or not reproducible failures. The error code indicates where the failure can be found.

[3] With the *DISPLAY* button the info on the display can be toggled to indicate either the status of *CD PLAY TEST* or the temperature measured via the NTC.

Note: ***These tests are not implemented in the first sets.***

CD ERROR CODES

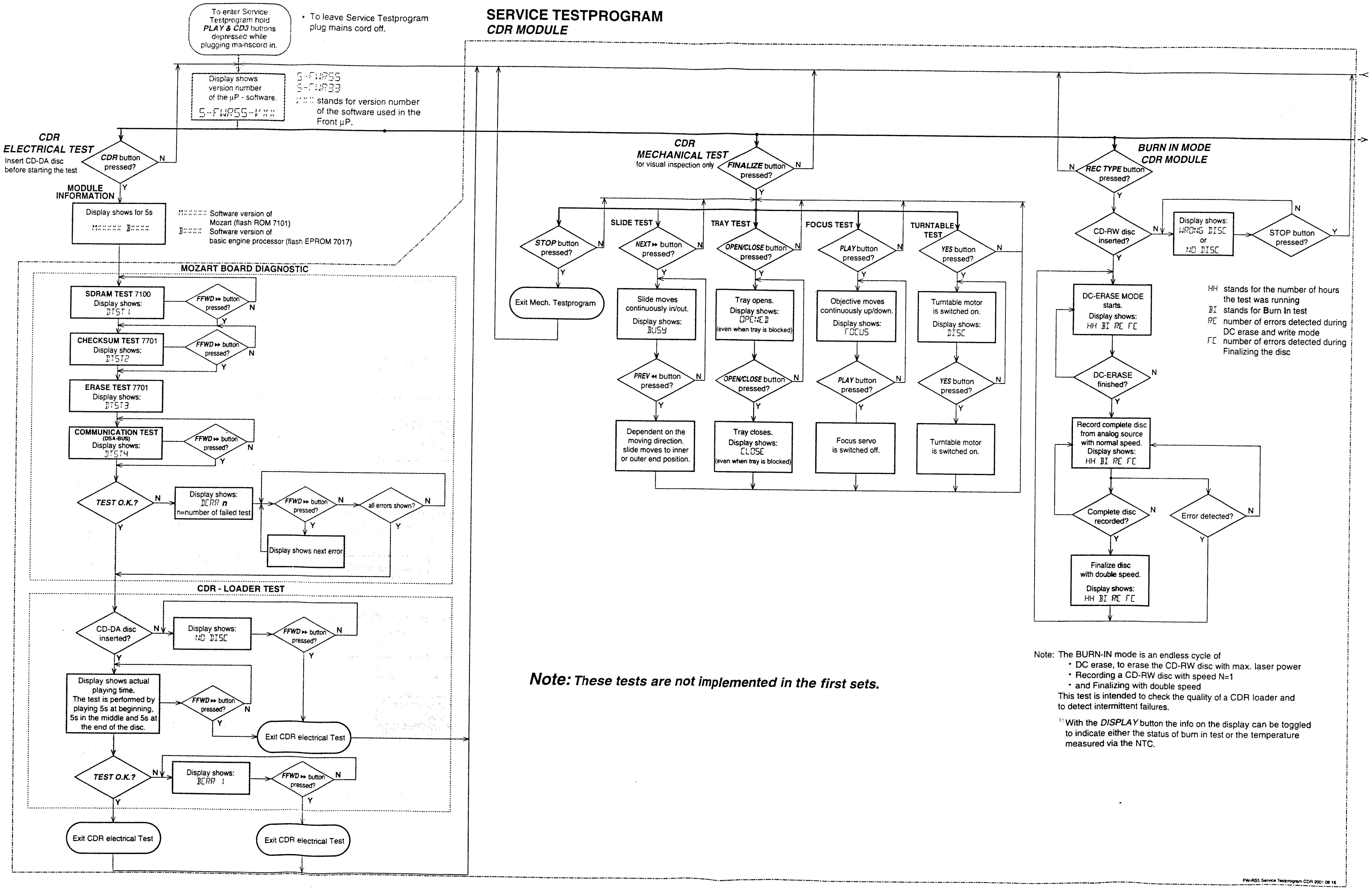
Error number	*Error description*	*Error type*
E1000	**Focus Error** Triggered when the focus is lost for more than 250ms while playing the CD.	W
E1001	**Radial error** Triggered when the radial servo is not on track for a certain time during playing the CD.	W
E1002	**Slide-in error** Generated when the inner-switch did not close within approx. 6s when the pick up is moved inside. Inner-switch or slide motor problems.	W
E1003	**Slide-out error** Generated when the inner-switch did not open within approx. 250ms when the pick up is moved from the inner position outside. Inner-switch or slide motor problems.	W
E1005	**Jump error.** Triggered when the servo processor counts too less tracks in a defined time during JUMPS. This can be caused by a disturbed HF-signal (the tracks cannot be recognized exactly), slide motor problems, track servo problems or scratched discs.	W
E1006	**Subcode Error** No valid subcode for 300ms during *PLAY.*	W
E1007	**PLL lock error** When no valid subcode was found within 300ms PLL is checked. If PLL is locked E1006 will be indicated else E1007 and the servo is stopped and restarted once again to recover (as if the user would have pressed *STOP* and then *PLAY* immediately).	W
E1008	**Disc motor error** Generated when the CD could not reach 75% of speed during startup within 1,2s.	W
E1020	**Focus Search Error** Triggered when the focus could not be found within 4s when starting up the CD.	F

table 1

Error type: W = Warning → set continues operation, message remains on the display until next error occurs or any key is pressed.

F = Fatal Error → set stops operation, message remains on the display.

SERVICE TESTPROGRAM
CDR MODULE


To enter Service Testprogram hold **PLAY & CD3** buttons depressed while plugging mainscord in.
• To leave Service Testprogram plug mains cord off.
Display shows version number of the µP - software.
S-FWR55-Vxx
S-FWR55
S-FWR33
Vxx stands for version number of the software used in the Front µP.
CDR ELECTRICAL TEST
Insert CD-DA disc before starting the test
CDR button pressed?
N
Y
MODULE INFORMATION
Display shows for 5s
Mxxxxx Bxxxx
Mxxxxx Software version of Mozart (flash ROM 7101)
Bxxxx Software version of basic engine processor (flash EPROM 7017)
MOZART BOARD DIAGNOSTIC
SDRAM TEST 7100
Display shows:
DTST1
FFWD ▸▸ button pressed?
CHECKSUM TEST 7701
Display shows:
DTST2
ERASE TEST 7701
Display shows:
DTST3
COMMUNICATION TEST (DSA-BUS)
Display shows:
DTST4
TEST O.K.?
Display shows:
DERR n
n=number of failed test
all errors shown?
Display shows next error
CDR - LOADER TEST
CD-DA disc inserted?
Display shows:
NO DISC
Display shows actual playing time. The test is performed by playing 5s at beginning, 5s in the middle and 5s at the end of the disc.
Exit CDR electrical Test
TEST O.K.?
Display shows:
DERR 1
Exit CDR electrical Test
Exit CDR electrical Test
CDR MECHANICAL TEST
for visual inspection only
FINALIZE button pressed?
STOP button pressed?
Exit Mech. Testprogram
SLIDE TEST
NEXT ▸▸ button pressed?
Slide moves continuously in/out.
Display shows:
BUSY
PREV ◂◂ button pressed?
Dependent on the moving direction, slide moves to inner or outer end position.
TRAY TEST
OPEN/CLOSE button pressed?
Tray opens.
Display shows:
OPENED
(even when tray is blocked)
OPEN/CLOSE button pressed?
Tray closes.
Display shows:
CLOSE
(even when tray is blocked)
FOCUS TEST
PLAY button pressed?
Objective moves continuously up/down.
Display shows:
FOCUS
PLAY button pressed?
Focus servo is switched off.
TURNTABLE TEST
YES button pressed?
Turntable motor is switched on.
Display shows:
DISC
YES button pressed?
Turntable motor is switched on.
BURN IN MODE CDR MODULE
REC TYPE button pressed?
CD-RW disc inserted?
Display shows:
WRONG DISC
or
NO DISC
STOP button pressed?
DC-ERASE MODE starts.
Display shows:
HH BI RE FE
DC-ERASE finished?
Record complete disc from analog source with normal speed.
Display shows:
HH BI RE FE
Complete disc recorded?
Error detected?
Finalize disc with double speed.
Display shows:
HH BI RE FE

HH stands for the number of hours the test was running
BI stands for Burn In test
RE number of errors detected during DC erase and write mode
FE number of errors detected during Finalizing the disc

***Note:** These tests are not implemented in the first sets.*

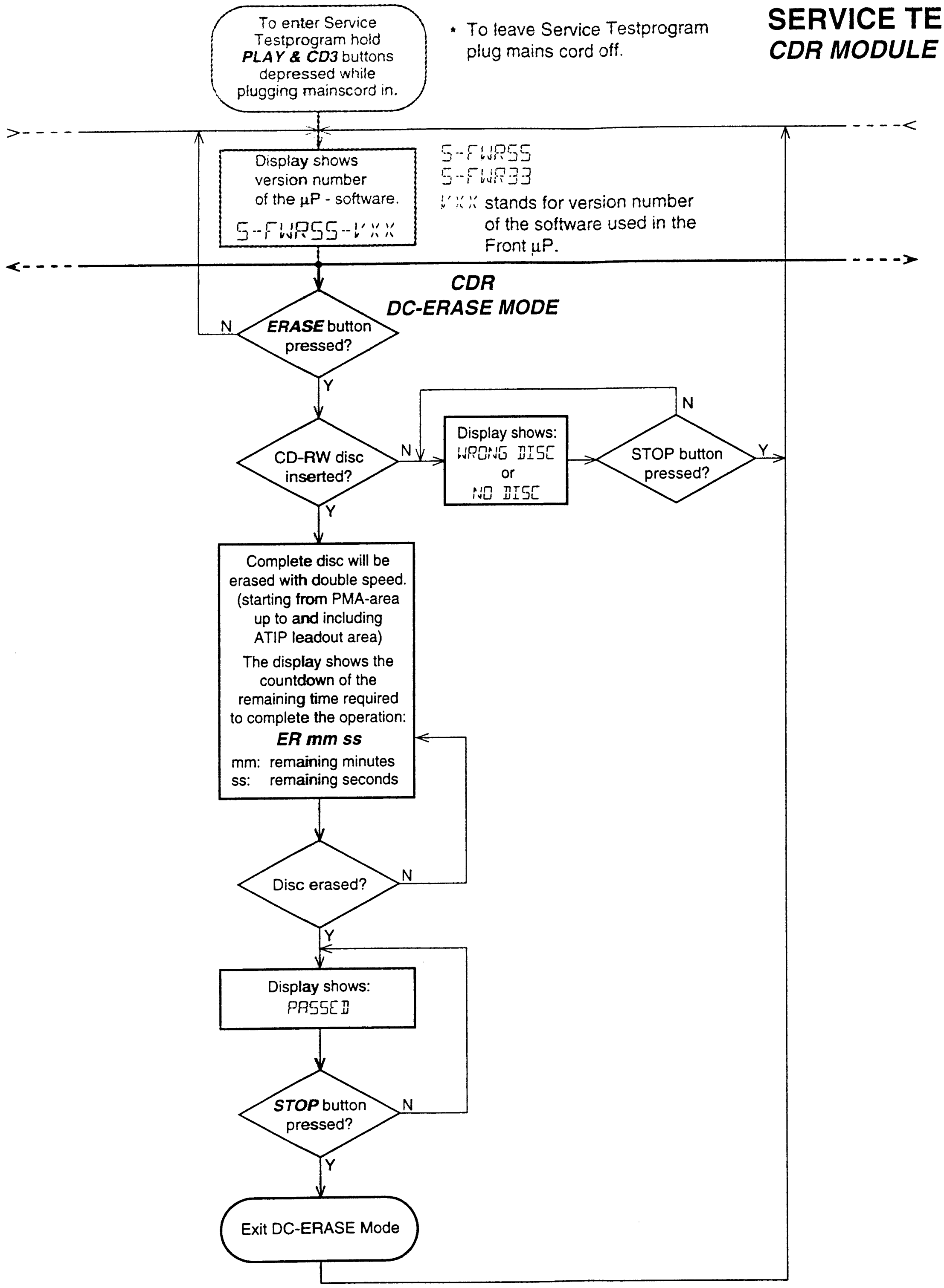
Note: The BURN-IN mode is an endless cycle of
- DC erase, to erase the CD-RW disc with max. laser power
- Recording a CD-RW disc with speed N=1
- and Finalizing with double speed

This test is intended to check the quality of a CDR loader and to detect intermittent failures.

[1] With the *DISPLAY* button the info on the display can be toggled to indicate either the status of burn in test or the temperature measured via the NTC.

SERVICE TESTPROGRAM
CDR MODULE

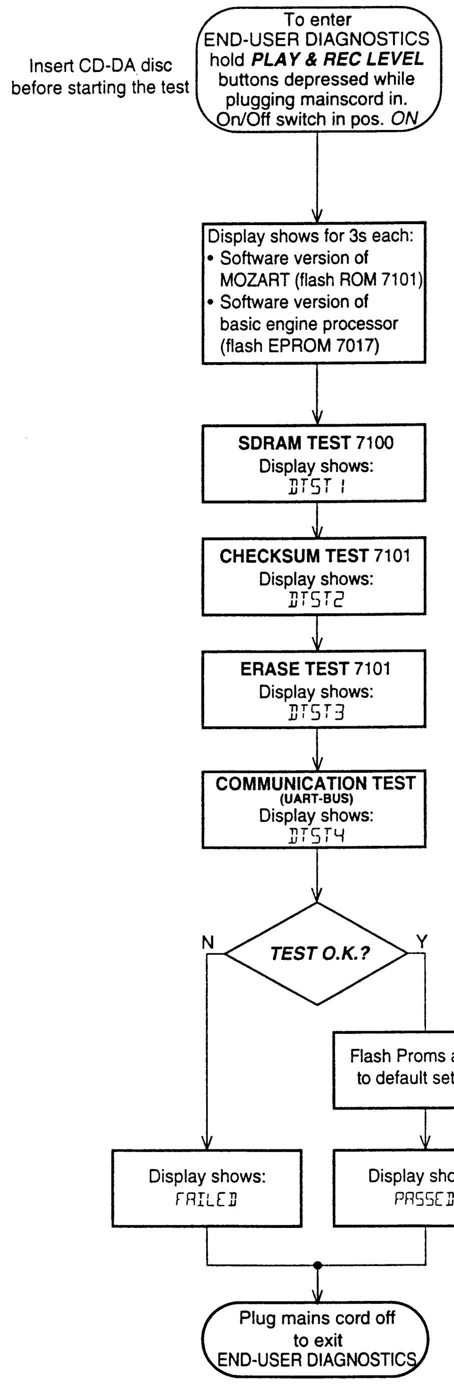
- To leave Service Testprogram plug mains cord off.


To enter Service Testprogram hold PLAY & CD3 buttons depressed while plugging mainscord in.
Display shows version number of the µP - software.
S-FWR55-VXX
S-FWR55
S-FWR33
VXX stands for version number of the software used in the Front µP.
CDR
DC-ERASE MODE
ERASE button pressed?
N
Y
CD-RW disc inserted?
N
Y
Display shows: WRONG DISC or NO DISC
STOP button pressed?
N
Y
Complete disc will be erased with double speed. (starting from PMA-area up to and including ATIP leadout area)
The display shows the countdown of the remaining time required to complete the operation:
ER mm ss
mm: remaining minutes
ss: remaining seconds
Disc erased?
N
Y
Display shows: PASSED
STOP button pressed?
N
Y
Exit DC-ERASE Mode

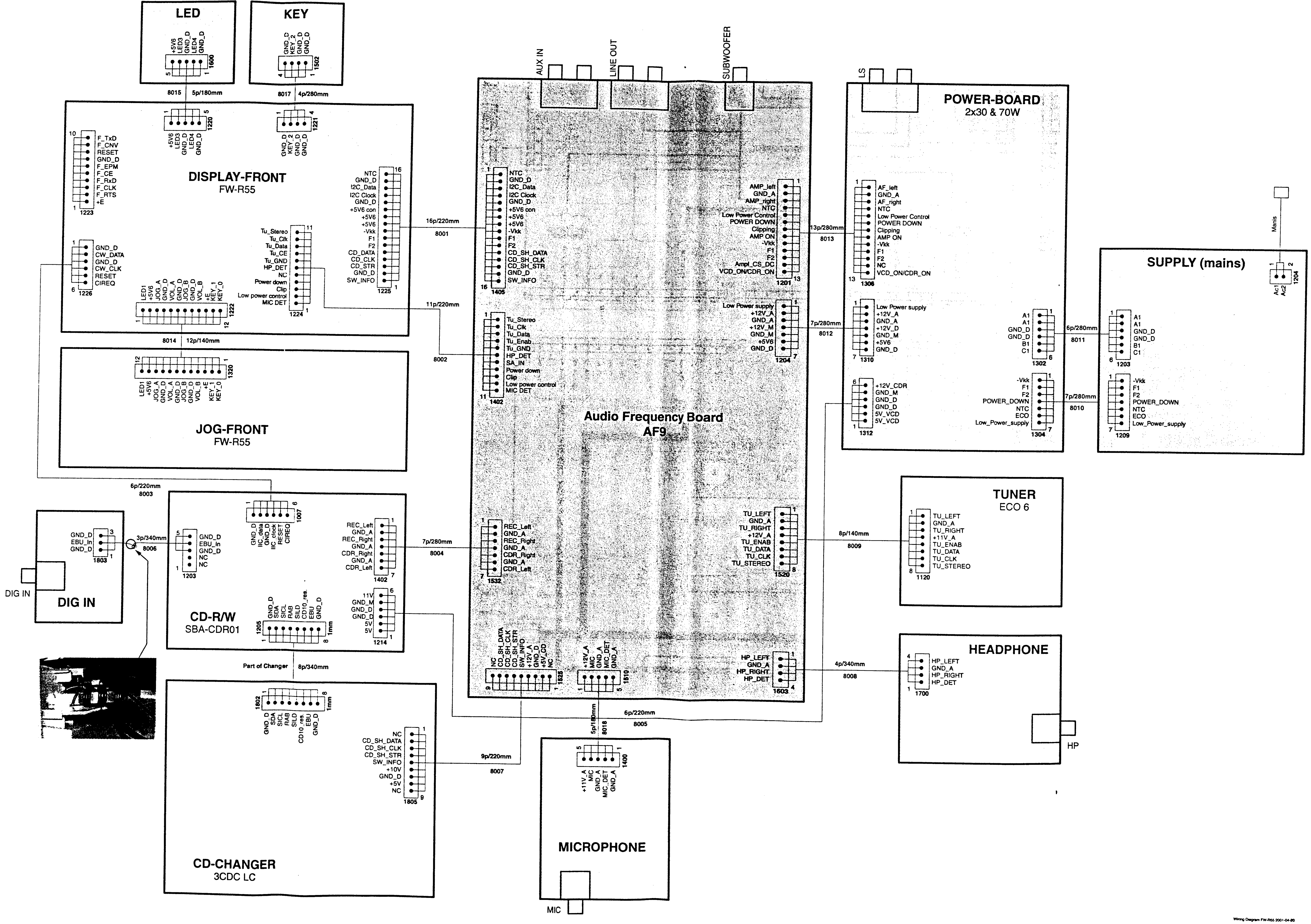
Note: With the DC-Erase mode the CD-RW can be changed back in its original state, like a new disc. Stopping the erase-function by switching power off will leave the disc in an unpredictable status!

***Note:** These tests are not implemented in the first sets.*

END-USER DIAGNOSTICS
(CDR module)

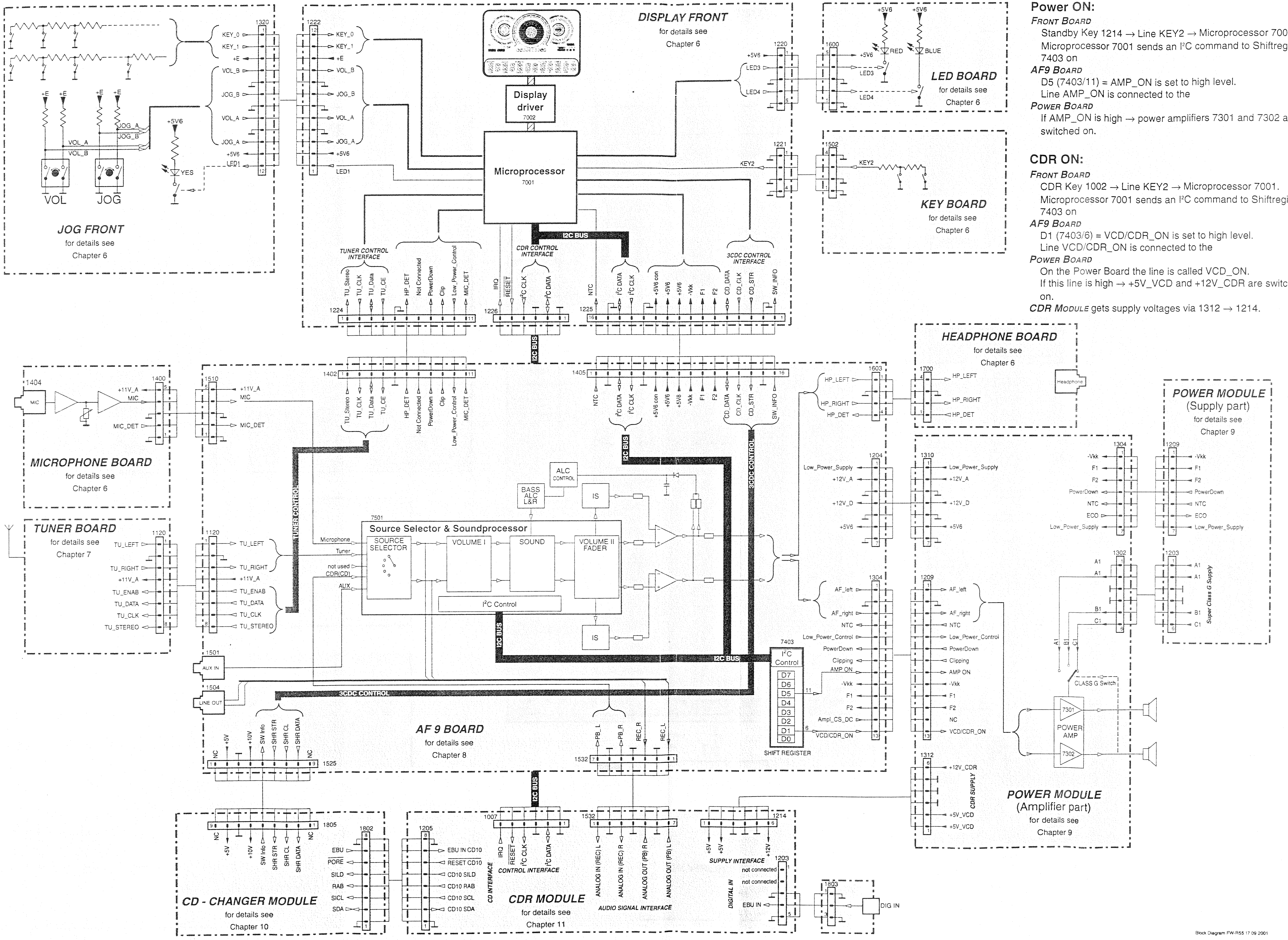

Insert CD-DA disc before starting the test
To enter END-USER DIAGNOSTICS hold PLAY & REC LEVEL buttons depressed while plugging mainscord in. On/Off switch in pos. ON
Display shows for 3s each:
• Software version of MOZART (flash ROM 7101)
• Software version of basic engine processor (flash EPROM 7017)
SDRAM TEST 7100
Display shows: DTST 1
CHECKSUM TEST 7101
Display shows: DTST2
ERASE TEST 7101
Display shows: DTST3
COMMUNICATION TEST (UART-BUS)
Display shows: DTST4
TEST O.K.?
N
Y
Flash Proms are set to default settings.
Display shows: FAILED
Display shows: PASSED
Plug mains cord off to exit END-USER DIAGNOSTICS

WIRING DIGRAM


LED
+5V6
LED3
GND_D
LED4
GND_D
5
1
1600
KEY
GND_D
KEY_2
GND_D
GND_D
4
1
1502
8015
5p/180mm
8017
4p/280mm
1220
1221
DISPLAY-FRONT
FW-R55
1223
F_TxD
F_CNV
RESET
GND_D
F_EPM
F_CE
F_RxD
F_CLK
F_RTS
+E
1226
GND_D
CW_DATA
GND_D
CW_CLK
RESET
CIREQ
1222
LED1
+5V6
JOG_A
GND_D
VOL_A
GND_D
JOG_B
GND_D
VOL_B
+E
KEY_1
KEY_0
1224
Tu_Stereo
Tu_Clk
Tu_Data
Tu_CE
Tu_GND
HP_DET
NC
Power down
Clip
Low power control
MIC DET
1225
NTC
GND_D
I2C_Data
I2C Clock
GND_D
+5V6 con
+5V6
+5V6
-Vkk
F1
F2
CD_DATA
CD_CLK
CD_STR
GND_D
SW_INFO
16p/220mm
8001
11p/220mm
8002
8014
12p/140mm
1320
JOG-FRONT
FW-R55
6p/220mm
8003
AUX IN
LINE OUT
SUBWOOFER
LS
Audio Frequency Board
AF9
1405
NTC
GND_D
I2C_Data
I2C Clock
GND_D
+5V6 con
+5V6
+5V6
-Vkk
F1
F2
CD_SH_DATA
CD_SH_CLK
CD_SH_STR
GND_D
SW_INFO
1402
Tu_Stereo
Tu_Clk
Tu_Data
Tu_Enab
Tu_GND
HP_DET
SA_IN
Power down
Clip
Low power control
MIC DET
1201
AMP_left
GND_A
AMP_right
NTC
Low Power Control
POWER DOWN
Clipping
AMP ON
-Vkk
F1
F2
Ampl_CS_DC
VCD_ON/CDR_ON
13p/280mm
8013
1204
Low Power supply
+12V_A
GND_A
+12V_M
GND_M
+5V6
GND_D
7p/280mm
8012
1532
REC_Left
GND_A
REC_Right
GND_A
CDR_Right
GND_A
CDR_Left
1520
TU_LEFT
GND_A
TU_RIGHT
+12V_A
TU_ENAB
TU_DATA
TU_CLK
TU_STEREO
1525
NC
CD_SH_DATA
CD_SH_CLK
CD_SH_STR
SW_INFO
+12V_A
GND_D
+5V_CD
NC
1510
+12V_A
MIC
GND_A
MIC_DET
GND_A
1603
HP_LEFT
GND_A
HP_RIGHT
HP_DET
POWER-BOARD
2x30 & 70W
1306
AF_left
GND_A
AF_right
NTC
Low Power Control
POWER DOWN
Clipping
AMP ON
-Vkk
F1
F2
NC
VCD_ON/CDR_ON
1310
Low Power supply
+12V_A
GND_A
+12V_D
GND_M
+5V6
GND_D
1312
+12V_CDR
GND_M
GND_D
GND_D
5V_VCD
5V_VCD
1302
A1
A1
GND_D
GND_D
B1
C1
1304
-Vkk
F1
F2
POWER_DOWN
NTC
ECO
Low_Power_supply
6p/280mm
8011
7p/280mm
8010
SUPPLY (mains)
Manis
1204
Ac1
Ac2
1203
A1
A1
GND_D
GND_D
B1
C1
1209
-Vkk
F1
F2
POWER_DOWN
NTC
ECO
Low_Power_supply
TUNER
ECO 6
1120
TU_LEFT
GND_A
TU_RIGHT
+11V_A
TU_ENAB
TU_DATA
TU_CLK
TU_STEREO
8p/140mm
8009
HEADPHONE
1700
HP_LEFT
GND_A
HP_RIGHT
HP_DET
4p/340mm
8008
HP
DIG IN
DIG IN
1803
GND_D
EBU_In
GND_D
3p/340mm
8006
CD-R/W
SBA-CDR01
1203
GND_D
EBU_In
GND_D
NC
NC
1007
GND_D
IIC_data
GND_D
IIC_clock
RESET
CIREQ
1402
REC_Left
GND_A
REC_Right
GND_A
CDR_Right
GND_A
CDR_Left
7p/280mm
8004
1214
11V
GND_M
GND_D
GND_D
5V
5V
1205
GND_D
SDA
SICL
RAB
SILD
CD10_res.
EBU
GND_D
1mm
Part of Changer
8p/340mm
CD-CHANGER
3CDC LC
1802
GND_D
SDA
SICL
RAB
SILD
CD10_res.
EBU
GND_D
1mm
1805
NC
CD_SH_DATA
CD_SH_CLK
CD_SH_STR
SW_INFO
+10V
GND_D
+5V
NC
9p/220mm
8007
6p/220mm
8005
5p/180mm
8018
MICROPHONE
1400
+11V_A
MIC
GND_A
MIC_DET
GND_A
MIC

Wiring Diagram FW-R55 2001-04-20

BLOCK DIAGRAM


JOG FRONT
for details see
Chapter 6
VOL
JOG
VOL_A
VOL_B
JOG_A
JOG_B
+5V6
YES
1320
KEY_0
KEY_1
+E
LED1
1222
DISPLAY FRONT
for details see
Chapter 6
Display driver
7002
Microprocessor
7001
I2C BUS
TUNER CONTROL INTERFACE
CDR CONTROL INTERFACE
3CDC CONTROL INTERFACE
TU_Stereo
TU_CLK
TU_Data
TU_CE
HP_DET
Not Connected
PowerDown
Clip
Low_Power_Control
MIC_DET
IRQ
RESET
I²C CLK
I²C DATA
NTC
+5V6 con
-Vkk
F1
F2
CD_DATA
CD_CLK
CD_STR
SW_INFO
1224
1226
1225
1220
1221
LED3
LED4
KEY2
1600
LED BOARD
for details see
Chapter 6
RED
BLUE
1502
KEY BOARD
for details see
Chapter 6
HEADPHONE BOARD
for details see
Chapter 6
1700
HP_LEFT
HP_RIGHT
Headphone
1603
1402
1405
1404
1400
MIC
+11V_A
MICROPHONE BOARD
for details see
Chapter 6
1510
TUNER BOARD
for details see
Chapter 7
1120
TU_LEFT
TU_RIGHT
TU_ENAB
TU_DATA
TU_CLK
TU_STEREO
TUNER CONTROL
3CDC CONTROL
ALC CONTROL
BASS ALC L&R
IS
7501
Source Selector & Soundprocessor
SOURCE SELECTOR
VOLUME I
SOUND
VOLUME II FADER
I²C Control
Microphone
Tuner
not used
CDR(CDI)
AUX
1501
AUX IN
1504
LINE OUT
AF 9 BOARD
for details see
Chapter 8
1525
NC
+5V
+10V
SW Info
SHR STR
SHR CL
SHR DATA
PB_L
PB_R
REC_R
REC_L
1532
7403
I²C Control
D7
D6
D5
D4
D3
D2
D1
D0
SHIFT REGISTER
1204
1304
1310
1209
1312
Low_Power_Supply
+12V_A
+12V_D
+5V6
AF_left
AF_right
Low_Power_Control
Clipping
AMP ON
Ampl_CS_DC
VCD/CDR_ON
+12V_CDR
+5V_VCD
CDR SUPPLY
POWER MODULE
(Supply part)
for details see
Chapter 9
1209
ECO
1302
1203
A1
B1
C1
Super Class G Supply
CLASS G Switch
7301
POWER AMP
7302
POWER MODULE
(Amplifier part)
for details see
Chapter 9
CD - CHANGER MODULE
for details see
Chapter 10
1805
1802
EBU
PORE
SILD
RAB
SICL
SDA
1205
EBU IN CD10
RESET CD10
CD10 SILD
CD10 RAB
CD10 SCL
CD10 SDA
CD INTERFACE
1007
CONTROL INTERFACE
CDR MODULE
for details see
Chapter 11
ANALOG IN (REC) L
ANALOG IN (REC) R
ANALOG OUT (PB) R
ANALOG OUT (PB) L
AUDIO SIGNAL INTERFACE
1214
SUPPLY INTERFACE
+12V
1203
not connected
EBU IN
DIGITAL IN
1803
DIG IN

Power ON:

Front Board

Standby Key 1214 → Line KEY2 → Microprocessor 7001.
Microprocessor 7001 sends an I²C command to Shiftregister 7403 on

AF9 Board

D5 (7403/11) = AMP_ON is set to high level.
Line AMP_ON is connected to the

Power Board

If AMP_ON is high → power amplifiers 7301 and 7302 are switched on.

CDR ON:

Front Board

CDR Key 1002 → Line KEY2 → Microprocessor 7001.
Microprocessor 7001 sends an I²C command to Shiftregister 7403 on

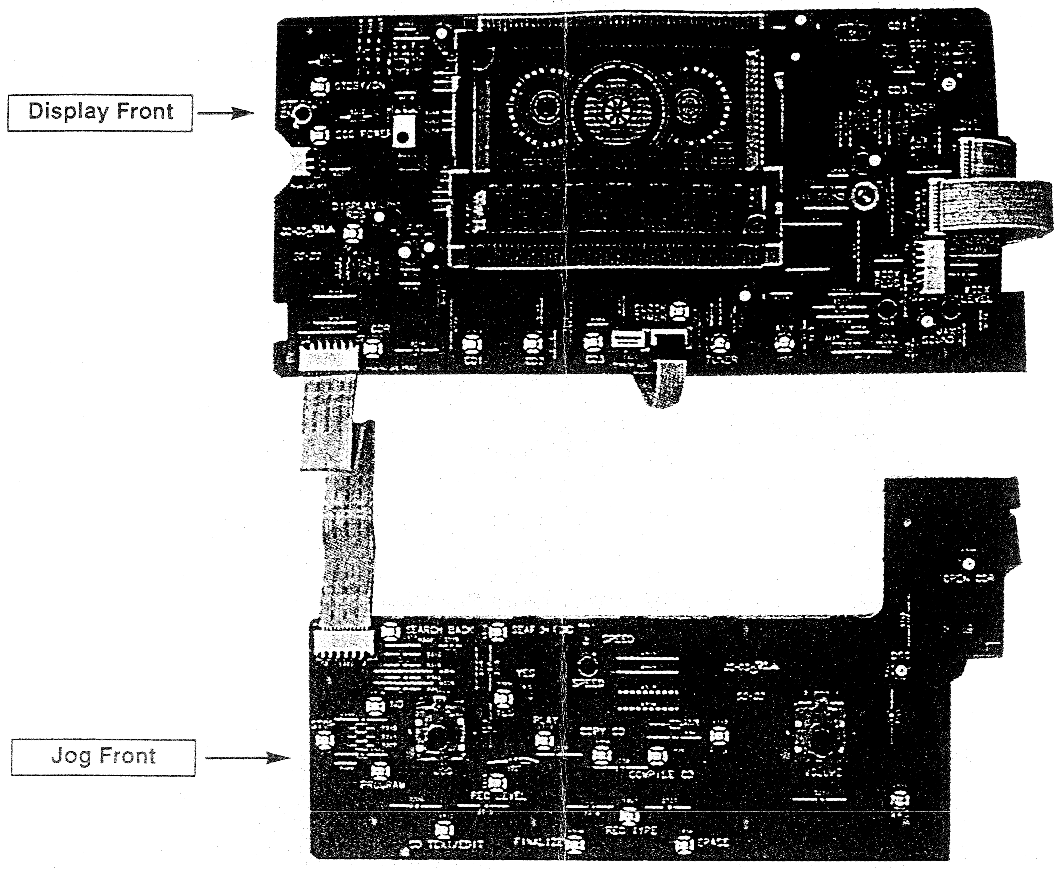
AF9 Board

D1 (7403/6) = VCD/CDR_ON is set to high level.
Line VCD/CDR_ON is connected to the

Power Board

On the Power Board the line is called VCD_ON.
If this line is high → +5V_VCD and +12V_CDR are switched on.

CDR Module gets supply voltages via 1312 → 1214.


Display Front
Jog Front

Front Board

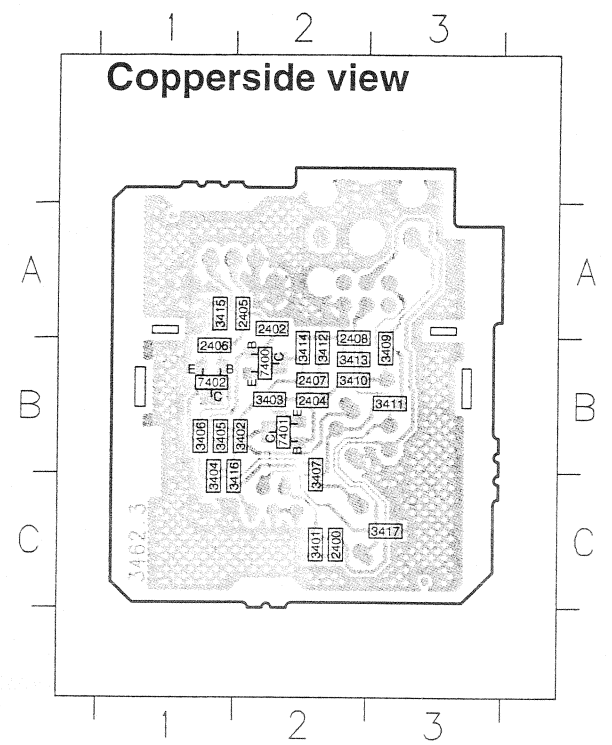
Layout stage .3

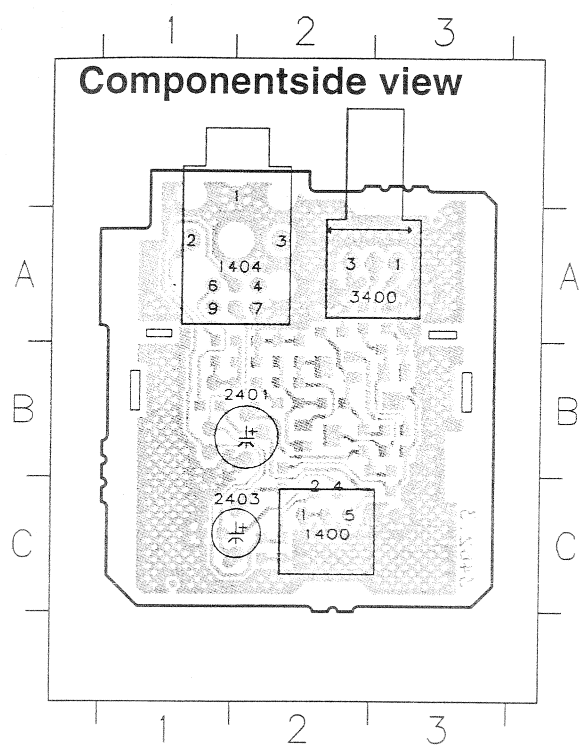
TABLE OF CONTENTS

Microphone Board 6-2
Blockdiagram 6-3
Display Front
Component Layout Copperside 6-4
Circuit Diagram part1 6-5
Component Layout Componentside 6-6
Circuit Diagram part2 6-7
Jog Front
Circuit Diagram 6-7
Component Layout 6-8
Break away parts 6-9
Display pinning 6-10
Partslist 6-11

MICROPHONE BOARD

2400 C2	2407 B2	3404 C1	3410 B2	3415 A1	7402 B1	1400 C2
2402 A2	2408 A2	3405 B1	3411 B3	3416 C1		1404 A2
2404 B2	3401 C2	3406 B1	3412 B2	3417 C3		2401 B2
2405 A2	3402 B2	3407 C2	3413 B2	7400 B2		2403 C2
2406 B1	3403 B2	3409 B3	3414 B2	7401 B2		3400 A3

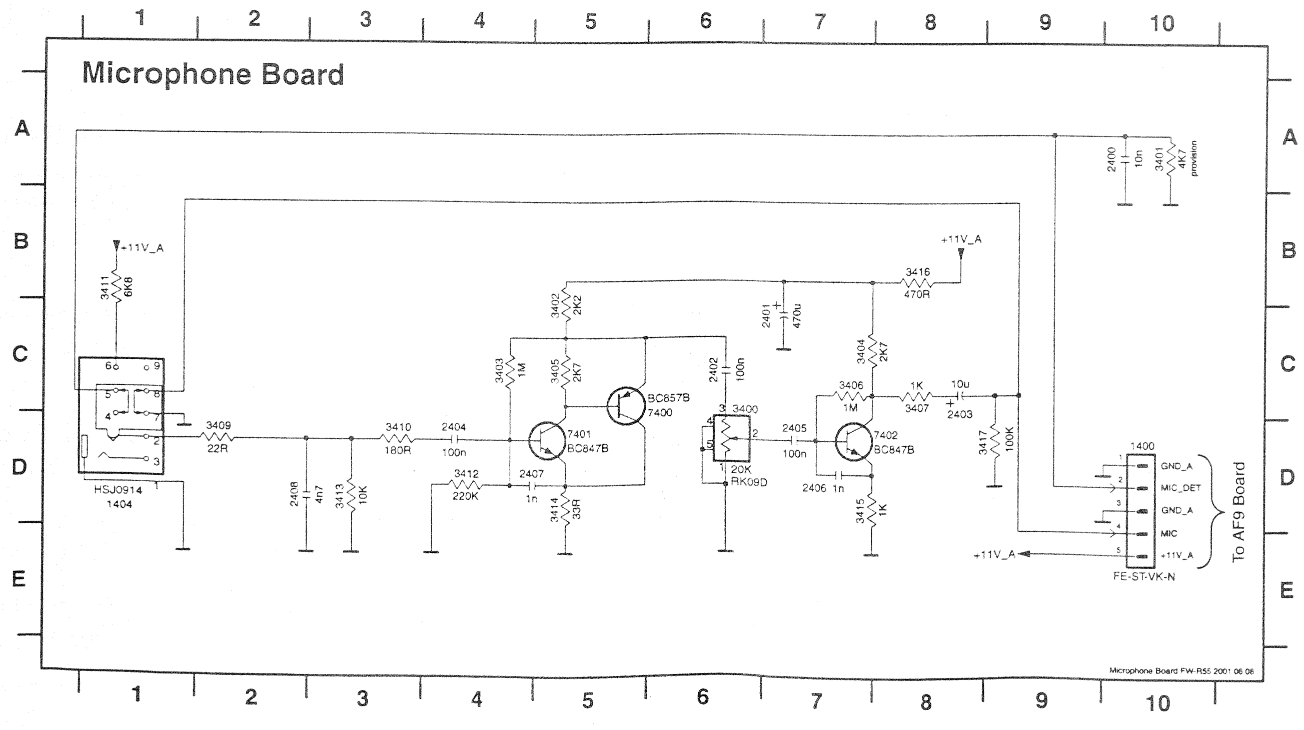

Copperside view
1
2
3
A
B
C
3415
2405
2402
2406
7402
3414
3412
2408
3409
3413
2407
3410
3403
2404
3411
3406
3405
3402
7401
3404
3416
3407
3401
2400
3417


Componentside view
1
2
3
A
B
C
1404
3400
2401
2403
1400

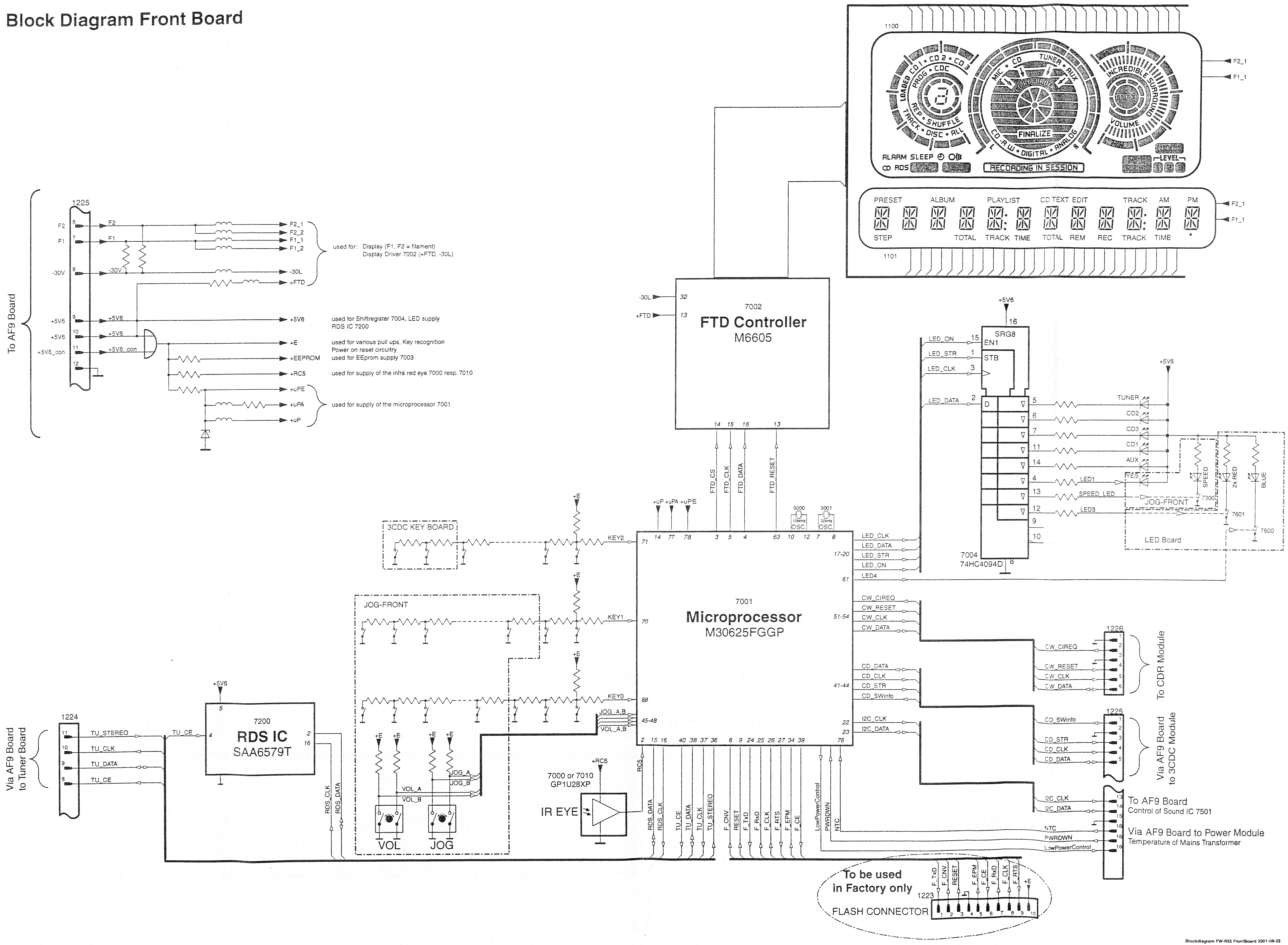
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

FW-R55 Microphone Board Layout stage .3 2001-06-07

1400 D10	2401 C7	2404 D4	2407 D4	3401 A10	3404 C7	3407 C8	3411 B1	3414 D5	3417 D9	7402 D8
1404 D1	2402 C6	2405 D7	2408 D2	3402 C5	3405 C5	3409 D2	3412 D4	3415 D7	7400 C6	
2400 A10	2403 C8	2406 D7	3400 C6	3403 C4	3406 C7	3410 D3	3413 D3	3416 B8	7401 D5	


Microphone Board
1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
+11V_A
3411
6K8
HSJ0914
1404
3409
22R
2408
4n7
3413
10K
3410
180R
2404
100n
3412
220K
2407
1n
3403
1M
3402
2K2
3405
2K7
3414
33R
7401
BC847B
BC857B
7400
2402
100n
3400
20K
RK09D
2405
100n
2406 1n
2401
470u
3404
2K7
3406
1M
7402
BC847B
3415
1K
3416
470R
1K
3407
10u
2403
3417
100K
2400
10n
3401
4K7
provision
1400
GND_A
MIC_DET
GND_A
MIC
+11V_A
FE-ST-VK-N
To AF9 Board
Microphone Board FW-R55 2001 06 08

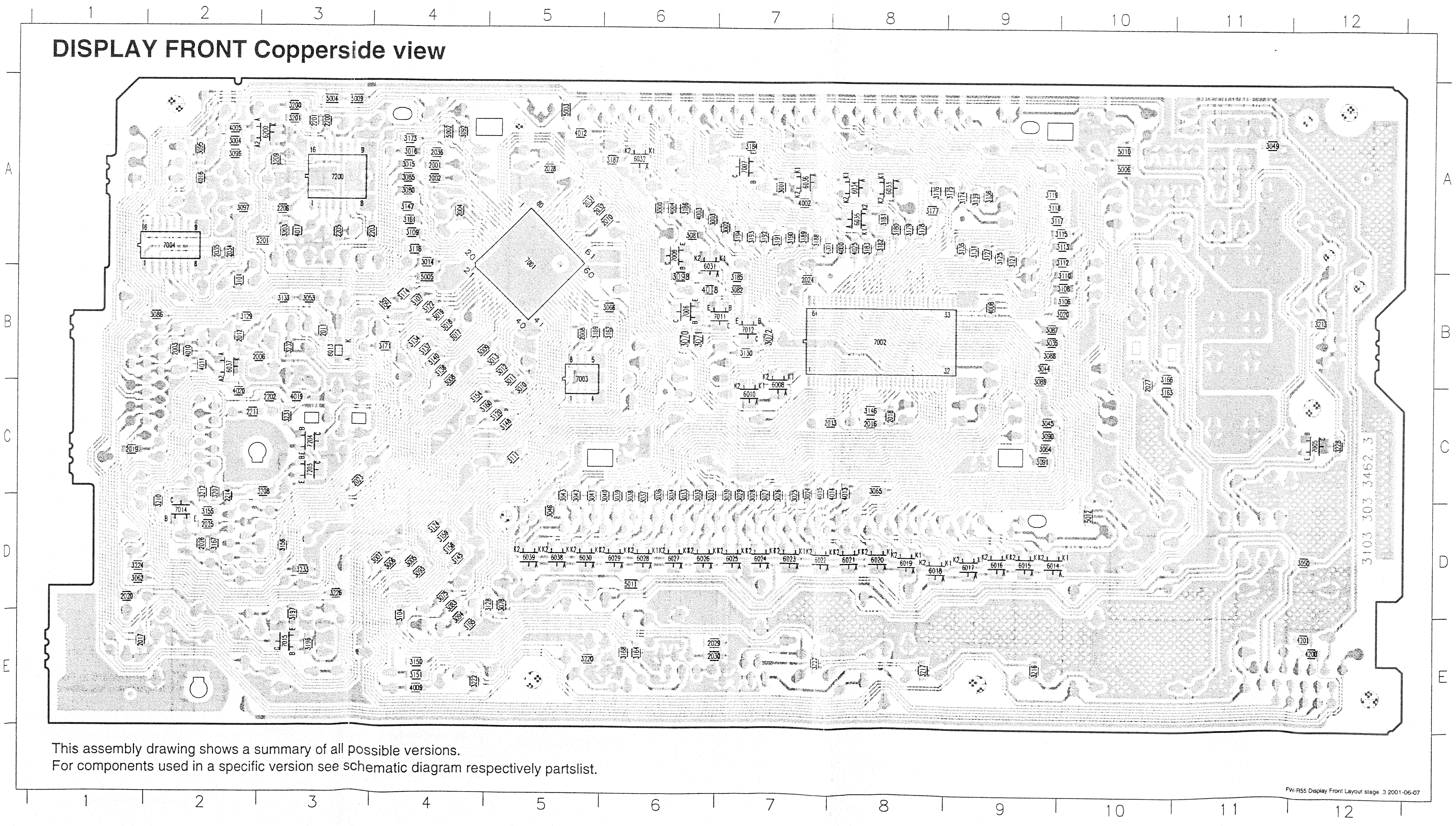
Block Diagram Front Board


To AF9 Board
1225
F2
F1
-30V
+5V6
+5V6
+5V6_con
F2_1
F2_2
F1_1
F1_2
-30L
+FTD
used for: Display (F1, F2 = filament)
Display Driver 7002 (+FTD, -30L)
+5V6
used for Shiftregister 7004, LED supply
RDS IC 7200
+E
used for various pull ups, Key recognition
Power on reset circuitry
+EEPROM
used for EEprom supply 7003
+RC5
used for supply of the infra red eye 7000 resp. 7010
+uPE
+uPA
+uP
used for supply of the microprocessor 7001
1100
1101
LOADED
CD1 • CD2 • CD3
PROG • CDC
REP • SHUFFLE
TRACK • DISC • ALL
MIC • CD • TUNER • AUX
CD RECORDER
FINALIZE
CD • RW • DIGITAL • ANALOG
INCREDIBLE SURROUND
VOLUME
ALARM SLEEP
RDS
RECORDING IN SESSION
LEVEL
PRESET
ALBUM
PLAYLIST
CD TEXT EDIT
TRACK
AM
PM
STEP
TOTAL
TRACK
TIME
TOTAL
REM
REC
TRACK
TIME
F2_1
F1_1
7002
FTD Controller
M6605
-30L
+FTD
FTD_CS
FTD_CLK
FTD_DATA
FTD_RESET
+5V6
SRG8
EN1
STB
D
LED_ON
LED_STR
LED_CLK
LED_DATA
TUNER
CD2
CD3
CD1
AUX
YES
LED1
SPEED_LED
LED3
SPEED
2x RED
BLUE
JOG-FRONT
7300
7601
7600
LED Board
7004
74HC4094D
3CDC KEY BOARD
KEY2
JOG-FRONT
KEY1
KEY0
JOG_A,B
VOL_A,B
+uP +uPA +uPE
5000
10MHz
OSC
5001
32kHz
OSC
7001
Microprocessor
M30625FGGP
LED_CLK
LED_DATA
LED_STR
LED_ON
LED4
CW_CIREQ
CW_RESET
CW_CLK
CW_DATA
CD_DATA
CD_CLK
CD_STR
CD_SWinfo
I2C_CLK
I2C_DATA
1226
To CDR Module
Via AF9 Board to 3CDC Module
To AF9 Board
Control of Sound IC 7501
Via AF9 Board to Power Module
Temperature of Mains Transformer
NTC
PWRDWN
LowPowerControl
Via AF9 Board to Tuner Board
1224
TU_STEREO
TU_CLK
TU_DATA
TU_CE
7200
RDS IC
SAA6579T
RDS_CLK
RDS_DATA
JOG_A
JOG_B
VOL_A
VOL_B
VOL
JOG
7000 or 7010
GP1U28XP
IR EYE
+RC5
RC5
F_CNV
RESET
F_TxD
F_RxD
F_CLK
F_RTS
F_EPM
F_CE
To be used
in Factory only
FLASH CONNECTOR
1223

Blockdiagram FW-R55 FrontBoard 2001-08-22

2001	A4
2002	A4
2003	B2
2004	A4
2006	B3
2008	B5
2010	A6
2011	B3
2012	B2
2013	C8
2016	C8
2017	E1
2018	C8
2019	C1
2020	D1
2023	C3
2024	B7
2025	D2
2026	D2
2027	B10
2028	A5
2029	E6
2030	E6
2031	A5
2032	A5
2034	A2
2035	A2
2036	A4
2200	A3
2201	A3
2202	C3
2203	A3
2205	A3
2206	A3
2211	C2
2214	D2
3000	A6
3001	A7
3002	A7
3003	A6
3004	A2
3005	D4
3006	D4
3007	D4
3008	B4
3009	B4
3010	C5
3011	B5
3012	B5
3013	B5
3014	A4
3015	A4
3016	A4
3017	B4
3018	B4
3019	B4
3020	B10
3024	C7
3025	C7
3026	C7
3027	C7
3028	C7
3029	C7
3030	C7
3031	C6
3032	C6
3033	C6
3034	C6
3035	B9
3036	C6
3037	C6
3038	C6
3039	C6
3040	C6
3041	C5
3042	C5
3043	C5
3044	B9
3045	C9
3046	D5
3049	A11
3050	D12
3053	B3
3054	B4
3062	D1
3064	C9
3065	C8
3066	B6
3070	B6
3071	B6
3072	B7
3075	D4
3078	D5
3080	A4
3081	A6
3082	B7
3083	D4
3085	A4
3086	B2
3087	B9
3088	B9
3089	B9
3090	C9
3091	C9
3092	A4
3093	D4
3094	E4
3095	A2
3096	A2
3097	A2
3098	B6
3101	B2
3104	E4
3106	B10
3107	B4
3108	B10
3109	A4
3110	B10
3111	C5
3112	A10
3113	A10
3114	B4
3115	A10
3116	A4
3117	A9
3118	A9
3119	A9
3120	C5
3121	A9
3122	B4
3124	D4
3125	A9
3127	A9
3128	D5
3129	B2
3130	B7
3131	A9
3133	B3
3134	B4
3135	A9
3136	A9
3137	B4
3138	B4
3139	A9
3140	B4
3145	D4
3146	C8
3147	A4
3148	C5
3150	E4
3151	E4
3154	C4
3155	D2
3156	D3
3158	D4
3159	D4
3160	C4
3161	A4
3162	B6
3163	C10
3164	E6
3166	B10
3167	D2
3168	E6
3169	B5
3171	B4
3173	A4
3174	A9
3175	A9
3176	A8
3177	A8
3178	A8
3179	A8
3180	A8
3181	A8
3182	A8
3183	A8
3184	A7
3185	B7
3186	A6
3187	A6
3188	A7
3189	A7
3190	A7
3191	A7
3192	A7
3193	A7
3194	A7
3195	E4
3196	E3
3197	E3
3200	A3
3201	A3
3203	A3
3207	C2
3208	C3
3209	A3
3210	D2
3212	C2
3213	B12
3216	E9
3217	E8
3220	E5
3222	E4
3224	D1
3226	D3
3227	E7
3228	C12
3231	C3
3232	B3
3233	D3
4000	A8
4001	A7
4002	A7
4003	A6
4004	A6
4005	A2
4008	B9
4009	E4
4010	B2
4011	B2
4012	A5
4013	C8
4014	C8
4015	C7
4016	A2
4017	A3
4018	B6
4019	C3
4020	C2
4025	A8
4200	E12
4201	E12
5002	A4
5003	A5
5004	A3
5005	B4
5006	A10
5009	A3
5010	A10
5011	D6
5012	D10
5201	A3
6008	C7
6010	C7
6013	B3
6014	D9
6015	D9
6016	D9
6017	D9
6018	D8
6019	D8
6020	D8
6021	D8
6022	D7
6023	D7
6024	D7
6025	D7
6026	D6
6027	D6
6028	D6
6029	D6
6030	D5
6031	A6
6032	A6
6033	A8
6034	A8
6035	A8
6036	A7
6037	B2
6038	D5
6039	D5
6200	A3
7001	A5
7002	B8
7003	B5
7004	A2
7005	C12
7006	B6
7007	A7
7008	A6
7011	B7
7012	B7
7014	D2
7015	E3
7200	A3
7203	C3
7204	C3

DISPLAY FRONT Copperside view

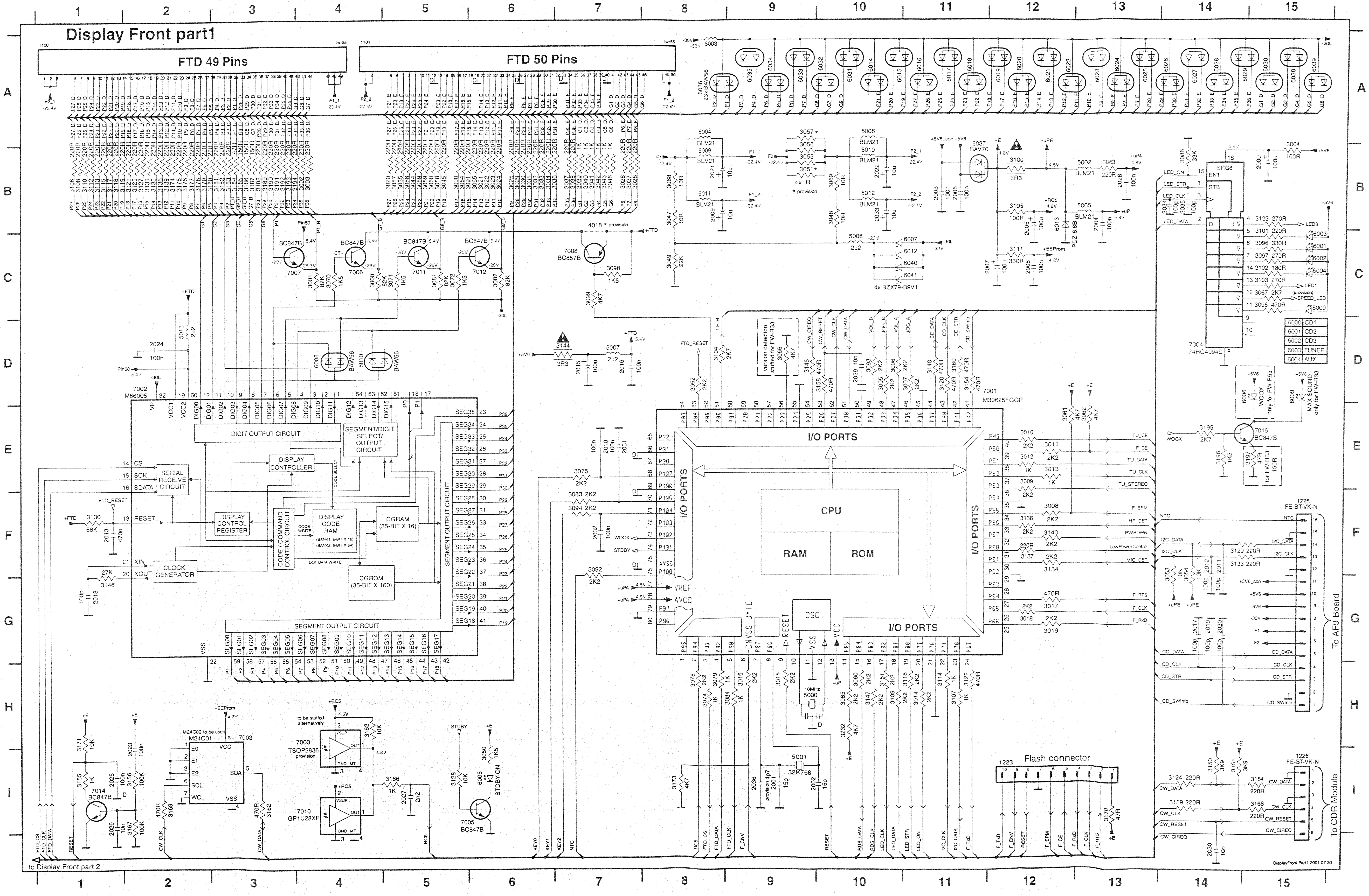


This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

FW-R55 Display Front Layout stage 3 2001-06-07

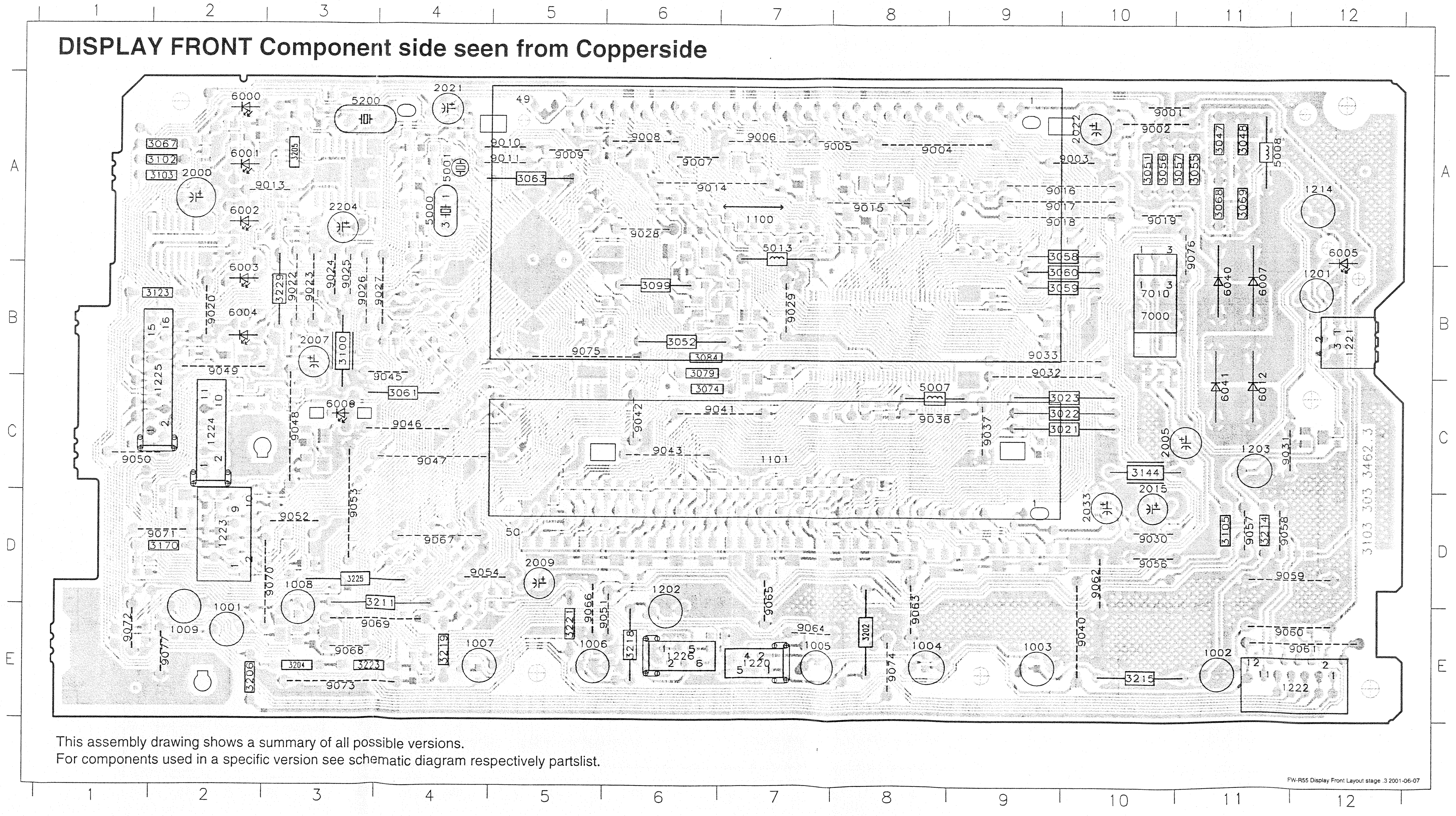
1100	A1
1101	A4
1223	I13
1225	F15
1226	I15
2000	B15
2001	I9
2002	I9
2003	B11
2004	B13
2005	B12
2006	B11
2007	C12
2008	C12
2009	B8
2010	E7
2011	F14
2012	F14
2013	F1
2015	D7
2016	D7
2017	G14
2018	G1
2019	G14
2020	G14
2021	B8
2022	B10
2023	I1
2024	D2
2025	I1
2026	I1
2027	I5
2028	B13
2029	D10
2030	I14
2031	E7
2032	F7
2033	B10
2034	B14
2035	B14
2036	I9
3000	C4
3001	C4
3002	B4
3003	B4
3004	B15
3005	D10
3006	D10
3007	D11
3008	F12
3009	E12
3010	E12
3011	E12
3012	E12
3013	E12
3014	H11
3015	H9
3016	H9
3017	G12
3018	G12
3019	G12
3020	B5
3021	B6
3022	B6
3023	B6
3024	B6
3025	B6
3026	B7
3027	B7
3028	B7
3029	B6
3030	B6
3031	B6
3032	B6
3033	B6
3034	B6
3035	B5
3036	B7
3037	B7
3038	B7
3039	B7
3040	B7
3041	B7
3042	B7
3043	B7
3044	B5
3045	B5
3046	B7
3047	B8
3048	B10
3049	C8
3050	I6
3051	B9
3052	D8
3053	G14
3054	G14
3055	B9
3056	B9
3057	A9
3058	B5
3059	B5
3060	B5
3061	E12
3062	E13
3063	B13
3064	B5
3065	B6
3066	D9
3067	C15
3068	B8
3069	B10
3070	C4
3071	C5
3072	C5
3074	H8
3075	E7
3078	H8
3079	H8
3080	H10
3081	C5
3082	C6
3083	F7
3084	H8
3085	H10
3086	B14
3087	B5
3088	B5
3089	B5
3090	B5
3091	B6
3092	F7
3093	D10
3094	F7
3095	C15
3096	C15
3097	C15
3098	C7
3099	C7
3100	B12
3101	C15
3102	C15
3103	C15
3104	D8
3105	B12
3106	B1
3107	H11
3108	B1
3109	H10
3110	B1
3111	C12
3112	B1
3113	B1
3114	H11
3115	B1
3116	H11
3117	B1
3118	B1
3119	B2
3120	D11
3121	B2
3122	H11
3123	B15
3124	I14
3125	B2
3127	B2
3128	I5
3129	F14
3130	F1
3131	B2
3133	F14
3134	F12
3135	B2
3136	B2
3137	F12
3138	F12
3139	B2
3140	F12
3144	D7
3145	D9
3146	G1
3147	H10
3148	D11
3150	I14
3151	I14
3154	D11
3155	I1
3156	I1
3158	D10
3159	I14
3160	D11
3161	H10
3162	I3
3163	H4
3164	I15
3166	I5
3167	I1
3168	I15
3169	I2
3170	I13
3171	H1
3173	I8
3174	B2
3175	B2
3176	B2
3177	B2
3178	B2
3179	B2
3180	B3
3181	B3
3182	B3
3183	B3
3184	B3
3185	B3
3186	B3
3187	B3
3188	B3
3189	B3
3190	B3
3191	B3
3192	B3
3193	B3
3194	B4
3195	E14
3196	E14
3197	E15
3232	H10
4018	B7
5000	H10
5001	I9
5002	B13
5003	A8
5004	A8
5005	B13
5006	A10
5007	D7
5008	C10
5009	B8
5010	B10
5011	B8
5012	B10
5013	D2
6000	C15
6001	C15
6002	C15
6003	C15
6004	C15
6005	I6
6006	D15
6007	C11
6008	D4
6009	D15
6010	D4
6012	C11
6013	B12
6014	A10
6015	A10
6016	A11
6017	A11
6018	A11
6019	A12
6020	A12
6021	A12
6022	A12
6023	A13
6024	A13
6025	A13
6026	A14
6027	A14
6028	A14
6029	A14
6030	A15
6031	A10
6032	A10
6033	A9
6034	A9
6035	A9
6036	A8
6037	A11
6038	A15
6039	A15
6040	C11
6041	C11
7000	H4
7001	D12
7002	D2
7003	H3
7004	D14
7005	I5
7006	C4
7007	C3
7008	C7
7010	I4
7011	C5
7012	C6
7014	I1
7015	E15

Display Front part1


FTD 49 Pins
FTD 50 Pins
7002 M66005
DIGIT OUTPUT CIRCUIT
SEGMENT/DIGIT SELECT/ OUTPUT CIRCUIT
DISPLAY CONTROLLER
SERIAL RECEIVE CIRCUIT
DISPLAY CONTROL REGISTER
CODE / COMMAND CONTROL CIRCUIT
DISPLAY CODE RAM
CGRAM (35-BIT X 16)
CGROM (35-BIT X 160)
CLOCK GENERATOR
SEGMENT OUTPUT CIRCUIT
7001 M30625FGGP
I/O PORTS
CPU
RAM
ROM
OSC.
CNVSS-BYTE
RESET
7004 74HC4094D
SRG8
6000 CD1
6001 CD2
6002 CD3
6003 TUNER
6004 AUX
1225 FE-BT-VK-N
To AF9 Board
1226 FE-BT-VK-N
To CDR Module
1223 Flash connector
7003 M24C01
M24C02 to be used
7000 TSOP2836 provision
to be stuffed alternatively
7010 GP1U28XP
7014 BC847B
7005 BC847B
6005 STDBY-ON
7015 BC847B
7008 BC857B
7007 BC847B
7006 BC847B
7011 BC847B
7012 BC847B
6008 BAW56
6010 BAW56
23x BAW56
4x BZX79-B9V1
6037 BAV70
PDZ-6.8B
10MHz 5000
5001 32K768
version detection: stuffed for FW-R33
WOOX only for FW-R55
MAX SOUND only for FW-R33
to Display Front part 2
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
DisplayFront Part1 2001 07 30

1001 E2	1101 C7	1225 C2	2204 A3	3057 A11	3079 B6	3202 E8	3223 E3	6001 A2	6041 C11	9008 A6	9019 A10	9030 D10	9045 C4	9056 D10	9066 E5	9076 A11
1002 E11	1201 B12	1226 E6	3021 C10	3058 A10	3084 B6	3204 E3	3225 D3	6002 A2	7000 B10	9009 A5	9020 B2	9031 C11	9046 C4	9057 D11	9067 D4	9077 E2
1003 E9	1202 D6	2000 A2	3022 C10	3059 B10	3099 B6	3205 A3	3229 B3	6003 B2	7010 B10	9010 A5	9022 B3	9032 B9	9047 C4	9058 D11	9068 E3	
1004 E8	1203 C11	2005 C10	3023 C10	3060 B10	3100 B3	3206 E2	5000 A4	6004 B2	9001 A10	9011 A5	9023 B3	9033 B9	9048 C3	9059 D12	9069 E4	
1005 E7	1214 A12	2007 B3	3047 A11	3061 C4	3102 A2	3211 D4	5001 A4	6005 A12	9002 A10	9013 A3	9024 B3	9037 C9	9049 B2	9060 E11	9070 D3	
1006 E5	1220 E7	2009 D5	3048 A11	3063 A5	3103 A2	3214 D11	5007 C8	6006 C3	9003 A10	9014 A6	9025 B3	9038 C8	9050 C1	9061 E12	9071 D2	
1007 E4	1221 B12	2015 C10	3051 A10	3067 A2	3105 D11	3215 E10	5008 A11	6007 B11	9004 A8	9015 A8	9026 B3	9040 E10	9051 E6	9062 D10	9072 E1	
1008 D3	1222 E12	2021 A4	3052 B6	3068 A11	3123 B2	3218 E6	5013 A7	6009 C3	9005 A8	9016 A9	9027 B4	9041 C7	9052 D3	9063 E8	9073 E3	
1009 D2	1223 D2	2022 A10	3055 A11	3069 A11	3144 C10	3219 E4	5200 A3	6012 C11	9006 A7	9017 A9	9028 A6	9042 C6	9053 D3	9064 E7	9074 E8	
1100 A7	1224 C2	2033 D10	3056 A10	3074 C6	3170 D2	3221 E5	6000 A2	6040 B11	9007 A6	9018 A9	9029 B7	9043 C6	9054 D4	9065 D7	9075 B5	

DISPLAY FRONT Component side seen from Copperside

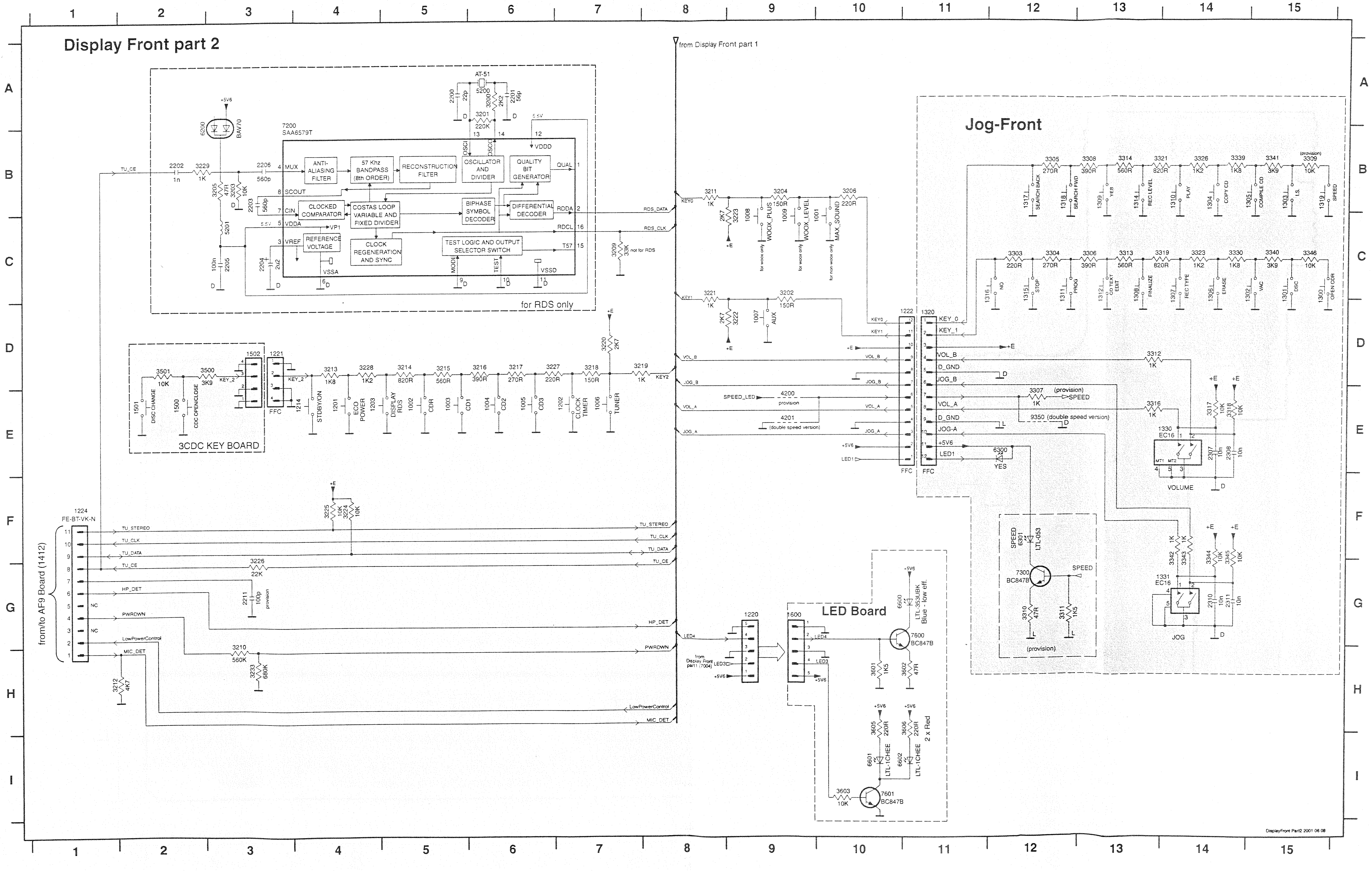

1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
6000
5200
2021
3067
3102
3103
2000
6001
3205
5001
5000
2204
6002
6003
6004
3229
3123
1225
9049
2007
3100
3061
6008
1224
9050
9071
3170
1223
9052
1009
1001
1008
3225
3211
9069
9068
3204
3223
3206
9073
9072
9077
9070
9053
9067
2009
9054
1202
3221
9066
9051
3218
1006
1007
3219
1220
1226
1005
3202
1004
1003
9040
1002
3215
1222
9060
9061
1101
9043
9041
9042
9038
9037
3023
3022
3021
5007
3079
3074
3084
3052
9075
3099
5013
1100
9029
9028
9014
9007
9008
9006
9005
9004
9003
9010
9011
9009
3063
49
50
2022
9001
9002
3051
3056
3057
3055
3047
3048
3068
3069
5008
9016
9017
9018
9019
3058
3060
3059
7010
7000
9076
6040
6007
6041
6012
9033
9032
1214
6005
1201
1221
2005
1203
9031
3144
2015
2033
9030
9056
3105
9057
3214
9058
9059
9062
9063
9064
9065
9074
9045
9046
9047
9048
9013
9020
9022
9023
9024
9025
9026
9027
3103 303 3462.3

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

FW-R55 Display Front Layout stage .3 2001-06-07

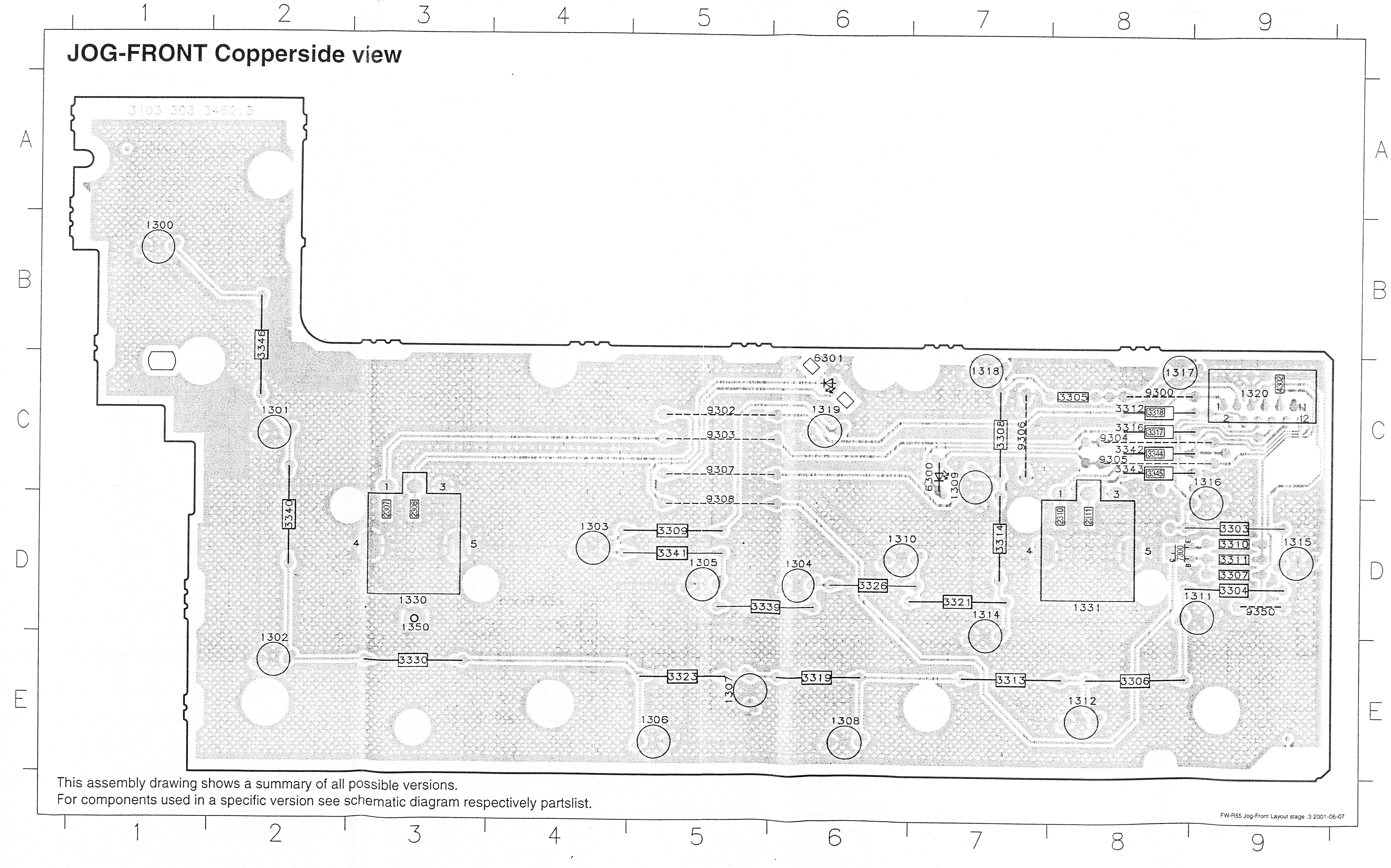
1001	C10
1002	E5
1003	E5
1004	E6
1005	E6
1006	E7
1007	D9
1008	C9
1009	C9
1201	E4
1202	E7
1203	E5
1204	E4
1220	G9
1221	D3
1222	D11
1224	F1
1300	C15
1301	C15
1302	C15
1303	B15
1304	B14
1305	B15
1306	C14
1307	C14
1308	C13
1309	B13
1310	B14
1311	C12
1312	C13
1314	B13
1315	C12
1316	C12
1317	B12
1318	B12
1319	B15
1320	D11
1330	E14
1331	G14
1500	E2
1501	E2
1502	D3
1600	G9
2200	A5
2201	A6
2202	B2
2203	B3
2204	C3
2205	C3
2206	B3
2211	G3
2307	E14
2308	E14
2310	G14
2311	G14
3200	A6
3201	A6
3202	C9
3203	B3
3204	B9
3205	B3
3206	B10
3209	C7
3210	H3
3211	B8
3212	H1
3213	D4
3214	D5
3215	D5
3216	D6
3217	D6
3218	D7
3219	D7
3220	D7
3221	C8
3222	D9
3223	C9
3224	F4
3225	F4
3226	G3
3227	D6
3228	D4
3229	B2
3233	H3
3303	C12
3304	C12
3305	B12
3306	C13
3307	E12
3308	B13
3309	B15
3310	G12
3311	G12
3312	D13
3313	C13
3314	B13
3316	E13
3317	E14
3318	E14
3319	C14
3321	B13
3323	C14
3326	B14
3330	C14
3339	B14
3340	C15
3341	B15
3342	G14
3343	G14
3344	G14
3345	G14
3346	C15
3500	D3
3501	D2
3601	H10
3602	H11
3603	I10
3605	H10
3606	H11
4200	E9
4201	E9
5200	A6
5201	C3
6200	B3
6300	E12
6301	F12
6600	G11
6601	I10
6602	I11
7200	B4
7300	G12
7600	G11
7601	I10
9350	E12

Display Front part 2


from Display Front part 1
7200
SAA6579T
ANTI-ALIASING FILTER
57 Khz BANDPASS (8th ORDER)
RECONSTRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
REFERENCE VOLTAGE
CLOCK REGENERATION AND SYNC
TEST LOGIC AND OUTPUT SELECTOR SWITCH
MUX
SCOUT
CIN
VDDA
VREF
VSSA
MODE
TEST
VSSD
VDDD
QUAL
RDDA
RDCL
T57
OSCI
OSCO
AT-51
BAV70
for RDS only
RDS_DATA
RDS_CLK
not for RDS
TU_CE
3CDC KEY BOARD
DISC CHANGE
CDC OPEN/CLOSE
STDBY/ON
ECO POWER
DISPLAY RDS
CDR
CD1
CD2
CD3
CLOCK TIMER
TUNER
KEY_2
FFC
WOOX_PLUS
WOOX_LEVEL
MAX_SOUND
AUX
for woox only
for non woox only
KEY0
KEY1
VOL_B
JOG_B
VOL_A
JOG_A
SPEED_LED
provision
(double speed version)
+5V6
LED1
Jog-Front
SEARCH BACK
SEARCH FWD
YES
REC LEVEL
PLAY
COPY CD
COMPILE CD
I.S.
SPEED
NO
STOP
PROG
CD TEXT EDIT
FINALIZE
REC TYPE
ERASE
VAC
DISC
OPEN CDR
KEY_0
KEY_1
D_GND
VOL_A
JOG-A
(provision)
SPEED
9350 (double speed version)
1330
EC16
VOLUME
1331
EC16
JOG
7300
BC847B
LTL-053
(provision)
1224
FE-BT-VK-N
from/to AF9 Board (1412)
NC
TU_STEREO
TU_CLK
TU_DATA
HP_DET
PWRDWN
LowPowerControl
MIC_DET
LED Board
from Display Front part1 (7004)
LED4
LED3
LTL-353UBK
Blue - low eff.
7600
BC847B
LTL-1CHEE
2 x Red
7601
BC847B
DisplayFront Part2 2001 06 08
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

1300	B1
1301	C2
1302	E2
1303	D4
1304	D6
1305	D5
1306	E5
1307	E5
1308	E6
1309	C7
1310	D6
1311	D9
1312	E8
1314	D7
1315	D9
1316	C9
1317	C8
1318	C7
1319	C6
1320	C9
1330	D3
1331	D8
1350	D3
2307	D3
2308	D3
2310	D8
2311	D8
3303	D9
3304	D9
3305	C8
3306	E8
3307	D8
3308	C7
3309	D5
3310	D8
3311	D8
3312	C8
3313	E7
3314	D7
3316	C8
3317	C8
3318	C8
3319	E6
3321	D7
3323	E5
3326	D6
3330	E3
3339	D5
3340	D2
3341	D5
3342	C8
3343	C8
3344	C8
3345	C8
3346	B2
4302	C9
6300	C7
6301	C6
7300	D8
9300	C8
9302	C5
9303	C5
9304	C8
9305	C8
9306	C7
9307	C5
9308	D5
9350	D9

JOG-FRONT Copperside view


1
2
3
4
5
6
7
8
9
A
B
C
D
E
3103 303 3462.3
1300
1301
1302
1303
1304
1305
1306
1307
1308
1309
1310
1311
1312
1314
1315
1316
1317
1318
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2308
2310
2311
3303
3304
3305
3306
3307
3308
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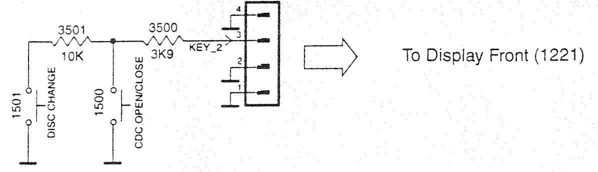
3313
3314
3316
3317
3318
3319
3321
3323
3326
3330
3339
3340
3341
3342
3343
3344
3345
3346
4302
6300
6301
7300
9300
9302
9303
9304
9305
9306
9307
9308
9350

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

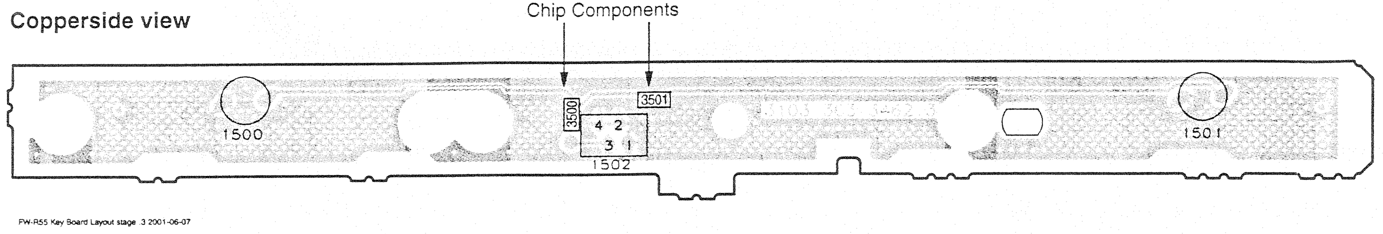
FW-R55 Jog-Front Layout stage .3 2001-06-07

Break away Parts

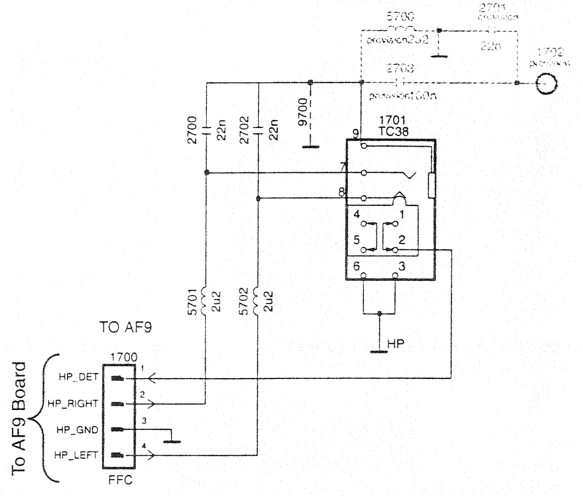
3CDC-KEY BOARD


1502
3501
10K
3500
3K9
KEY_2
4
3
2
1
1501
DISC CHANGE
1500
CDC OPEN/CLOSE
To Display Front (1221)

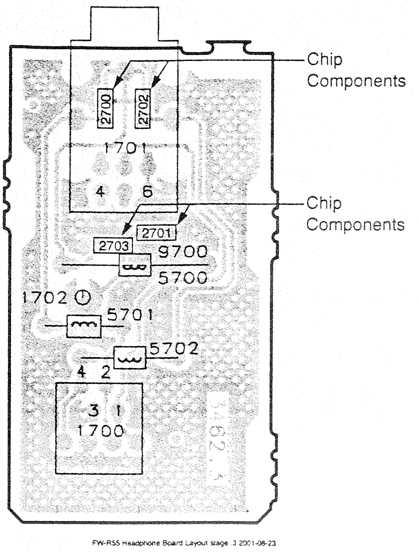
Copperside view


Chip Components
3500
3501
4 2
3 1
1502
1500
1501
FW-R55 Key Board Layout stage 3 2001-06-07

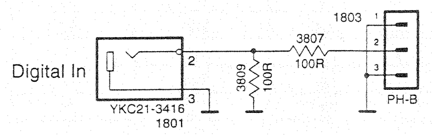
HEADPHONE BOARD


5700
provision2u2
2701
provision
22n
2703
provision100n
1702
provision
2700
22n
2702
22n
9700
1701
TC38
9
7
8
4
1
5
2
6
3
HP
5701
2u2
5702
2u2
TO AF9
1700
HP_DET
HP_RIGHT
HP_GND
HP_LEFT
FFC
To AF9 Board

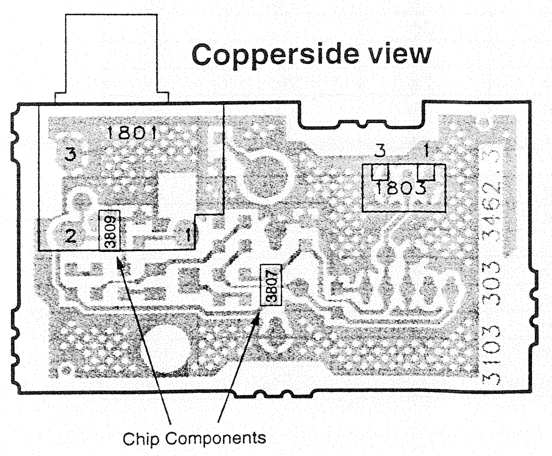
Copperside view


Chip Components
Chip Components
2700
2702
1701
4
6
2701
2703
9700
5700
1702
5701
5702
4 2
3 1
1700
FW-R55 Headphone Board Layout stage 3 2001-06-23

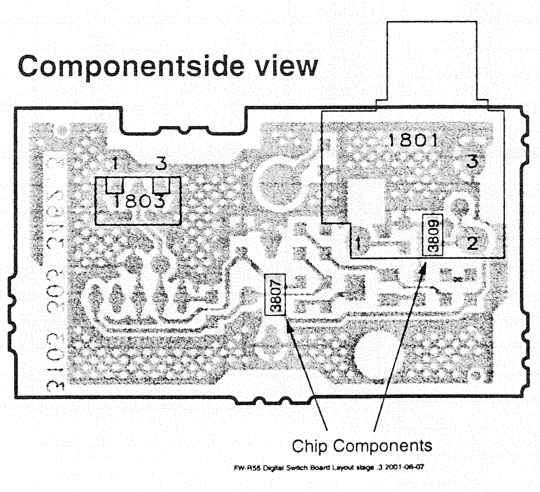
DIGITAL IN BOARD


Digital In
2
3
YKC21-3416
1801
3809
100R
3807
100R
1803
1
2
3
PH-B

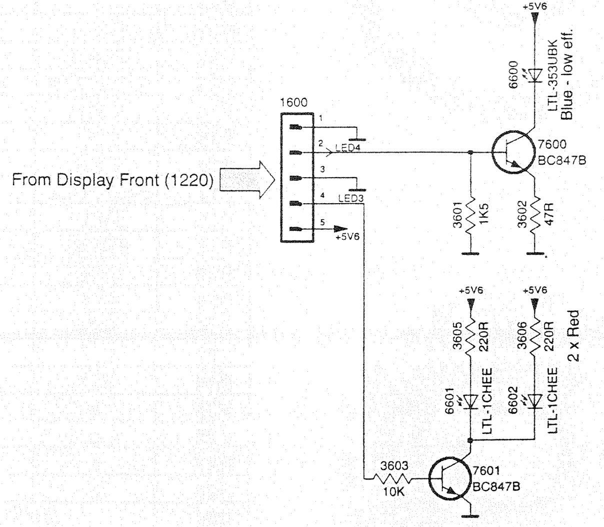
Copperside view


1801
3
2
1
3809
3
1
1803
3807
3103 303 3462.3
Chip Components

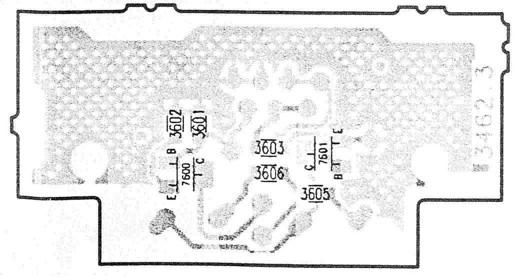
Componentside view


1801
3
2
1
3809
1
3
1803
3807
Chip Components
FW-R55 Digital Switch Board Layout stage 3 2001-06-07

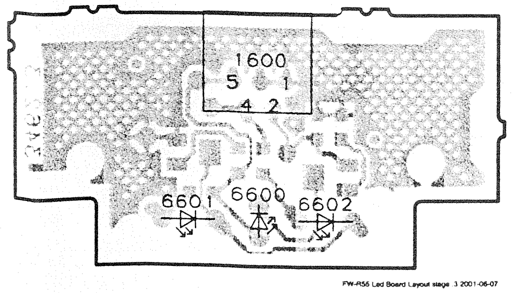
LIGHTGUIDE BOARD


+5V6
6600
LTL-353UBK
Blue - low eff.
1600
1
2
LED4
3
4
LED3
5
+5V6
From Display Front (1220)
7600
BC847B
3601
1K5
3602
47R
+5V6
+5V6
3605
220R
3606
220R
2 x Red
6601
LTL-1CHEE
6602
LTL-1CHEE
3603
10K
7601
BC847B

Copperside view

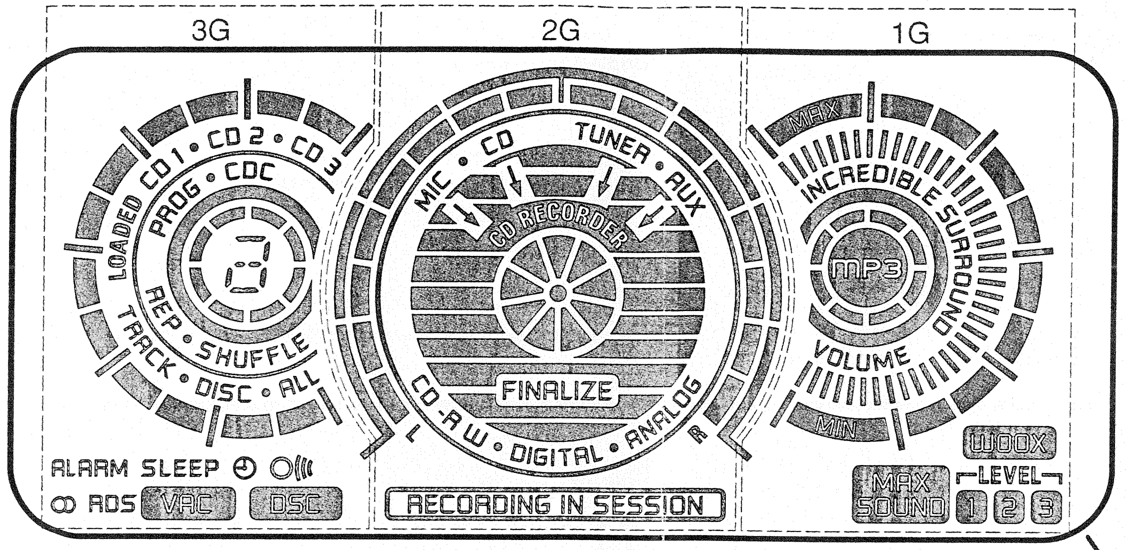

3602
3601
3603
3606
3605
7600
7601
3462.3

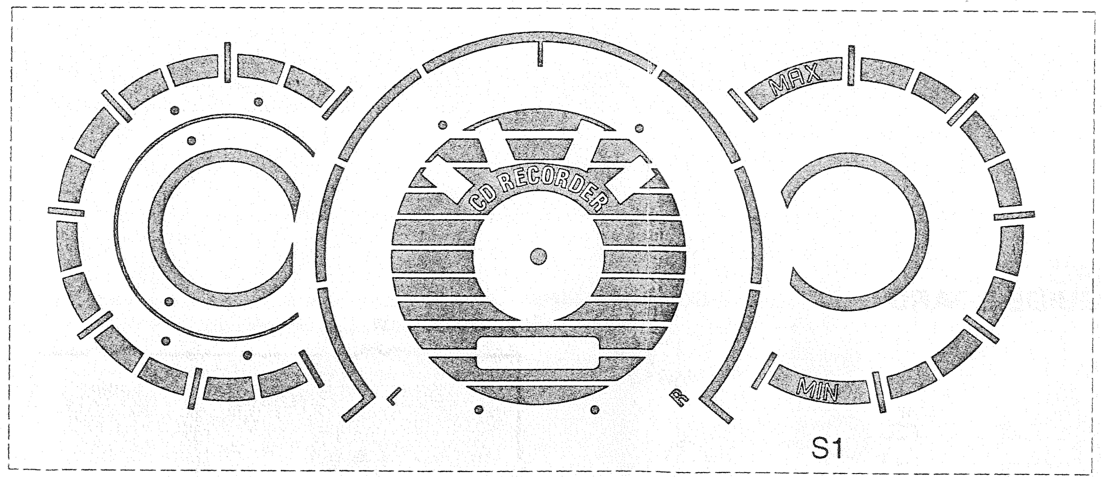
Componentside view

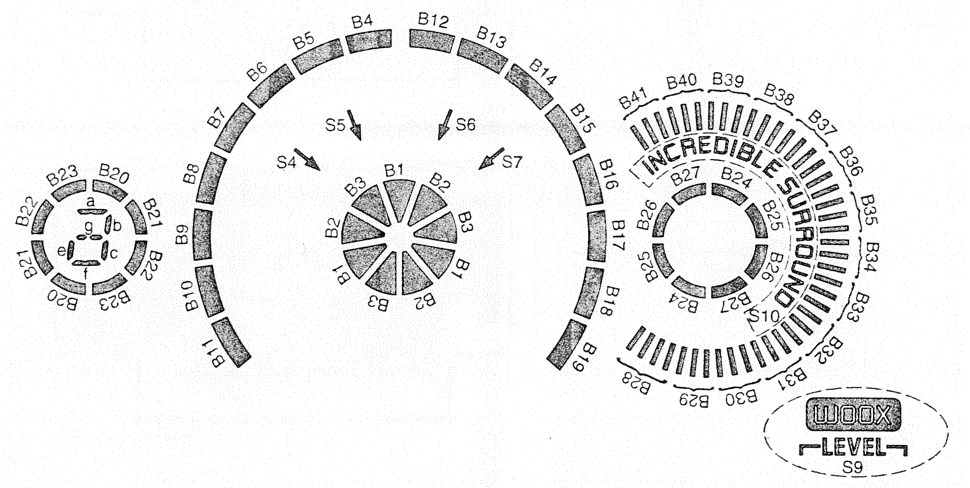

1600
5 1
4 2
6601
6600
6602
FW-R55 Led Board Layout stage 3 2001-06-07

Display pinning

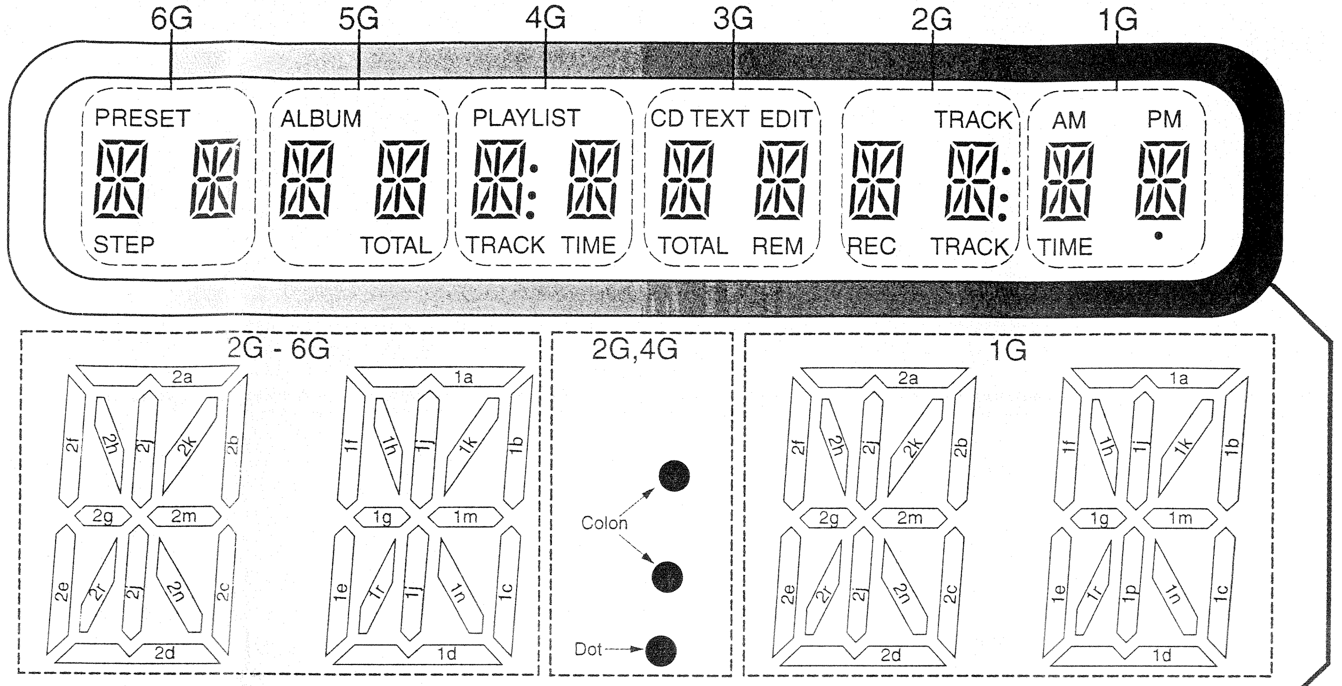
Display 1


3G
2G
1G
LOADED
CD 1
CD 2
CD 3
PROG
CDC
REP
SHUFFLE
TRACK
DISC
ALL
MIC
CD
TUNER
AUX
CD RECORDER
FINALIZE
CD-RW
DIGITAL
ANALOG
L
R
MAX
INCREDIBLE SURROUND
MP3
VOLUME
MIN
ALARM SLEEP
RDS
VAC
DSC
RECORDING IN SESSION
wOOx
MAX SOUND
LEVEL
1
2
3


CD RECORDER
MAX
MIN
L
R
S1


B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
B14
B15
B16
B17
B18
B19
B20
B21
B22
B23
B24
B25
B26
B27
B28
B29
B30
B31
B32
B33
B34
B35
B36
B37
B38
B39
B40
B41
S4
S5
S6
S7
S9
S10
a
b
c
d
e
f
g
INCREDIBLE SURROUND
wOOx
LEVEL

Display 2


6G
5G
4G
3G
2G
1G
PRESET
STEP
ALBUM
TOTAL
PLAYLIST
TRACK
TIME
CD TEXT EDIT
TOTAL
REM
TRACK
REC
TRACK
AM
PM
TIME
2G - 6G
2G,4G
1G
2a
2b
2c
2d
2e
2f
2g
2h
2j
2k
2m
2n
2r
1a
1b
1c
1d
1e
1f
1g
1h
1j
1k
1m
1n
1r
1p
Colon
Dot

Display 1

	3G	2G	1G
P01	DSC	RECORDING IN SESSION	3
P02	VAC	DIGITAL	2
P03	RDS	ANALOG	1
P04	S8	W	S9
P05	S3	-R	MAX SOUND
P06	S2	CD	B28
P07	SLEEP	FINALIZE	B29
P08	ALARM	B2	B30
P09	ALL	B1	B31
P10		S1	
P11	DISC	B3	B32
P12	TRACK	S7	B33
P13	LOADED	S6	B34
P14	CD1	S5	B35
P15	CD2	S4	B36
P16	CD3	AUX	B37
P17	SHUFFLE	TUNER	B38
P18	REP	CD	B39
P19	PROG	MIC	B40
P20	CDC	B15	B41
P21	B22	B14	S10
P22	B23	B13	VOLUME
P23	B20	B12	MP3
P24	B21	B4	B25
P25	e	B5	B24
P26	a.g.d	B6	B27
P27	c	B7	B26
P28	b		
P29	B11		
P30	B10		
P31	B9		
P32	B8		
P33		B19	
P34		B18	
P35		B17	
P36		B16	

Display 2

	6G	5G	4G	3G	2G	1G
P01	PRESET	ALBUM	PLAYLIST	EDIT	TRACK	1p
P02	-	-	Dot	TEXT	Dot	PM
P03	-	-	Colon	CD	Colon	AM
P04	1a	1a	1a	1a	1a	1a
P05	1h	1h	1h	1h	1h	1h
P06	1j	1j	1j	1j	1j	1j
P07	1k	1k	1k	1k	1k	1k
P08	1b	1b	1b	1b	1b	1b
P09	1f	1f	1f	1f	1f	1f
P10	1m	1m	1m	1m	1m	1m
P11	1g	1g	1g	1g	1g	1g
P12	1c	1c	1c	1c	1c	1c
P13	1e	1e	1e	1e	1e	1e
P14	1r	1r	1r	1r	1r	1r
P15	1n	1n	1n	1n	1n	1n
P16	1d	1d	1d	1d	1d	1d
P17	2a	2a	2a	2a	2a	2a
P18	2h	2h	2h	2h	2h	2h
P19	2j	2j	2j	2j	2j	2j
P20	2k	2k	2k	2k	2k	2k
P21	2b	2b	2b	2b	2b	2b
P22	2f	2f	2f	2f	2f	2f
P23	2m	2m	2m	2m	2m	2m
P24	2g	2g	2g	2g	2g	2g
P25	2c	2c	2c	2c	2c	2c
P26	2e	2e	2e	2e	2e	2e
P27	2r	2r	2r	2r	2r	2r
P28	2n	2n	2n	2n	2n	2n
P29	2d	2d	2d	2d	2d	2d
P30	STEP	TOTAL	TIME	REM	TRACK	Dot
P31	-	-	TRACK	TOTAL	REC	TIME

FW-R55 Display 2001 05 28

ELECTRICAL PARTSLIST Front Board

MISCELLANEOUS

1001	4822 276 13775	TACT SWITCH
1002	4822 276 13775	TACT SWITCH
1003	4822 276 13775	TACT SWITCH
1004	4822 276 13775	TACT SWITCH
1005	4822 276 13775	TACT SWITCH
1006	4822 276 13775	TACT SWITCH
1007	4822 276 13775	TACT SWITCH
1008	4822 276 13775	TACT SWITCH
1009	4822 276 13775	TACT SWITCH
1100	3103 308 53820	DISPLAY, FTD BIG
1101	3103 308 53830	DISPLAY, FTD SMALL
1201	4822 276 13775	TACT SWITCH
1202	4822 276 13775	TACT SWITCH
1203	4822 276 13775	TACT SWITCH
1214	4822 276 13775	TACT SWITCH
1220	4822 267 10954	FLEX FOIL CONNECTOR 5P
1221	4822 265 11183	FLEX FOIL CONNECTOR 4P
1222	4822 267 51453	FLEX FOIL CONNECTOR 12P
1224	4822 267 11039	FLEX FOIL CONNECTOR 11P
1225	2422 025 14526	FLEX FOIL CONNECTOR 16P
1226	4822 267 10731	FLEX FOIL CONNECTOR 6P
1300	4822 276 13775	TACT SWITCH
1301	4822 276 13775	TACT SWITCH
1302	4822 276 13775	TACT SWITCH
1303	4822 276 13775	TACT SWITCH
1304	4822 276 13775	TACT SWITCH
1305	4822 276 13775	TACT SWITCH
1306	4822 276 13775	TACT SWITCH
1307	4822 276 13775	TACT SWITCH
1308	4822 276 13775	TACT SWITCH
1309	4822 276 13775	TACT SWITCH
1310	4822 276 13775	TACT SWITCH
1311	4822 276 13775	TACT SWITCH
1312	4822 276 13775	TACT SWITCH
1314	4822 276 13775	TACT SWITCH
1315	4822 276 13775	TACT SWITCH
1316	4822 276 13775	TACT SWITCH
1317	4822 276 13775	TACT SWITCH
1318	4822 276 13775	TACT SWITCH
1320	4822 267 51453	FLEX FOIL CONNECTOR 12P
1330	4822 273 10365	ROTARY ENCODER **Volume**
1331	2422 129 16376	ROTARY ENCODER **Jog**
1400	4822 267 10958	FLEX FOIL CONNECTOR 5P
1404	4822 267 40898	MICROPHONE SOCKET
1500	4822 276 13775	TACT SWITCH
1501	4822 276 13775	TACT SWITCH
1502	4822 267 10733	FLEX FOIL CONNECTOR 4P
1600	4822 267 10958	FLEX FOIL CONNECTOR 5P
1700	4822 265 11183	FLEX FOIL CONNECTOR 4P
1701	4822 265 11529	HEADPHONE SOCKET
1801	4822 267 31729	CINCH CONNECTOR, 1 POLE
7010	4822 130 10165	GP1U28XP, IR EYE

CAPACITORS

2000	4822 124 41584	100µF	20%	10V
2001©	4822 122 33752	15pF	5%	50V
2002©	4822 122 33752	15pF	5%	50V
2003©	4822 126 14305	100nF	10%	16V
2004©	4822 126 14305	100nF	10%	16V
2005	4822 124 41584	100µF	20%	10V
2006©	4822 126 14305	100nF	10%	16V
2007	4822 124 41584	100µF	20%	10V
2008©	4822 126 14305	100nF	10%	16V
2009	4822 124 40248	10µF	20%	63V

CAPACITORS

2010©	4822 126 14305	100nF	10%	16V
2011©	4822 122 31765	100pF	5%	50V
2012©	4822 122 31765	100pF	5%	50V
2013©	3198 017 44740	470nF	20%	10V
2015	4822 124 41584	100µF	20%	10V
2016©	4822 126 14305	100nF	10%	16V
2017©	4822 122 31765	100pF	5%	50V
2018©	4822 122 31765	100pF	5%	50V
2019©	4822 122 31765	100pF	5%	50V
2020©	4822 122 31765	100pF	5%	50V
2021	4822 124 40248	10µF	20%	63V
2022	4822 124 40248	10µF	20%	63V
2023©	4822 126 14305	100nF	10%	16V
2024©	4822 126 14305	100nF	10%	16V
2025©	4822 126 14305	100nF	10%	16V
2026©	5322 126 11583	10nF	10%	63V
2027©	4822 126 14238	2,2nF	10%	50V
2028©	4822 126 14305	100nF	10%	16V
2029©	5322 126 11583	10nF	10%	63V
2030©	5322 126 11583	10nF	10%	63V
2031©	4822 126 14305	100nF	10%	16V
2032©	4822 126 14305	100nF	10%	16V
2033	4822 124 40248	10µF	20%	63V
2034©	4822 122 31765	100pF	5%	50V
2035©	4822 122 31765	100pF	5%	50V
2036©	4822 122 33741	10pF	10%	50V
2200©	4822 122 33761	22pF	5%	50V
2201©	4822 126 14225	56pF	5%	50V
2202©	5322 126 11578	1nF	10%	63V
2203©	4822 126 14249	560pF	10%	50V
2204	4822 124 22652	2,2µF	20%	50V
2205©	4822 126 14305	100nF	10%	16V
2206©	4822 126 14249	560pF	10%	50V
2307©	5322 126 11583	10nF	10%	63V
2308©	5322 126 11583	10nF	10%	63V
2310©	5322 126 11583	10nF	10%	63V
2311©	5322 126 11583	10nF	10%	63V
2400©	5322 126 11583	10nF	10%	63V
2401	4822 124 80791	470µF	20%	16V
2402©	4822 126 14305	100nF	10%	16V
2403	4822 124 40248	10µF	20%	63V
2404©	4822 126 14305	100nF	10%	16V
2405©	4822 126 14305	100nF	10%	16V
2406©	5322 126 11578	1nF	10%	63V
2407©	5322 126 11578	1nF	10%	63V
2408©	4822 126 13193	4,7nF	10%	63V
2700©	4822 126 14494	22nF	10%	25V
2702©	4822 126 14494	22nF	10%	25V

RESISTORS

3000©	4822 117 12864	82kΩ	5%	0,6W
3001©	4822 117 12864	82kΩ	5%	0,6W
3002©	4822 051 30221	220Ω	5%	0,06W
3003©	4822 051 30221	220Ω	5%	0,06W
3004©	4822 051 30101	100Ω	5%	0,06W
3005©	4822 051 30222	2,2kΩ	5%	0,06W
3006©	4822 051 30222	2,2kΩ	5%	0,06W
3007©	4822 051 30222	2,2kΩ	5%	0,06W
3008©	4822 051 30222	2,2kΩ	5%	0,06W
3009©	4822 051 30222	2,2kΩ	5%	0,06W
3010©	4822 051 30222	2,2kΩ	5%	0,06W
3011©	4822 051 30222	2,2kΩ	5%	0,06W
3012©	4822 051 30102	1kΩ	5%	0,06W
3013©	4822 051 30102	1kΩ	5%	0,06W
3013©	4822 051 30222	2,2kΩ	5%	0,06W

ELECTRICAL PARTSLIST Front Board

RESISTORS

3014©	4822 051 30222	2,2kΩ	5%	0,06W
3015©	4822 051 30222	2,2kΩ	5%	0,06W
3016©	4822 051 30222	2,2kΩ	5%	0,06W
3017©	4822 051 30471	470Ω	5%	0,06W
3018©	4822 051 30222	2,2kΩ	5%	0,06W
3019©	4822 051 30222	2,2kΩ	5%	0,06W
3020©	4822 051 30221	220Ω	5%	0,06W
3021	4822 116 83872	220Ω	5%	0,5W
3022	4822 116 83872	220Ω	5%	0,5W
3023	4822 116 83872	220Ω	5%	0,5W
3024©	4822 051 30221	220Ω	5%	0,06W
3025©	4822 051 30221	220Ω	5%	0,06W
3026©	4822 051 30221	220Ω	5%	0,06W
3027©	4822 051 30221	220Ω	5%	0,06W
3028©	4822 051 30221	220Ω	5%	0,06W
3029©	4822 051 30221	220Ω	5%	0,06W
3030©	4822 051 30221	220Ω	5%	0,06W
3031©	4822 051 30221	220Ω	5%	0,06W
3032©	4822 051 30221	220Ω	5%	0,06W
3033©	4822 051 30221	220Ω	5%	0,06W
3034©	4822 051 30221	220Ω	5%	0,06W
3035©	4822 051 30221	220Ω	5%	0,06W
3036©	4822 051 30221	220Ω	5%	0,06W
3037©	4822 051 30221	220Ω	5%	0,06W
3038©	4822 051 30221	220Ω	5%	0,06W
3039©	4822 051 30102	1kΩ	5%	0,06W
3040©	4822 051 30102	1kΩ	5%	0,06W
3041©	4822 051 30102	1kΩ	5%	0,06W
3042©	4822 051 30102	1kΩ	5%	0,06W
3043©	4822 051 30102	1kΩ	5%	0,06W
3044©	4822 051 30221	220Ω	5%	0,06W
3045©	4822 051 30221	220Ω	5%	0,06W
3046©	4822 051 30102	1kΩ	5%	0,06W
3047	4822 116 52176	10Ω	5%	0,5W
3048	4822 116 52176	10Ω	5%	0,5W
3049©	4822 051 30223	22kΩ	5%	0,06W
3050©	4822 051 30152	1,5kΩ	5%	0,06W
3052	4822 116 52256	2,2kΩ	5%	0,16W
3053©	4822 051 30103	10kΩ	5%	0,06W
3054©	4822 051 30103	10kΩ	5%	0,06W
3055	4822 116 80176	1Ω	5%	0,5W
3056	4822 116 80176	1Ω	5%	0,5W
3058	4822 116 83872	220Ω	5%	0,5W
3059	4822 116 83872	220Ω	5%	0,5W
3060	4822 116 83872	220Ω	5%	0,5W
3061	4822 116 52283	4,7kΩ	5%	0,5W
3062©	4822 051 30472	4,7kΩ	5%	0,06W
3063	4822 116 83872	220Ω	5%	0,5W
3064©	4822 051 30221	220Ω	5%	0,06W
3065©	4822 051 30221	220Ω	5%	0,06W
3066©	4822 051 30472	4,7kΩ	5%	0,06W
3068	4822 116 52176	10Ω	5%	0,5W
3069	4822 116 52176	10Ω	5%	0,5W
3070©	4822 051 30152	1,5kΩ	5%	0,06W
3071©	4822 051 30152	1,5kΩ	5%	0,06W
3072©	4822 051 30152	1,5kΩ	5%	0,06W
3074	4822 050 11002	1kΩ	5%	0,2W
3075©	4822 051 30222	2,2kΩ	5%	0,06W
3078©	4822 051 30222	2,2kΩ	5%	0,06W
3079	4822 050 11002	1kΩ	5%	0,2W
3080©	4822 051 30222	2,2kΩ	5%	0,06W
3081©	4822 117 12864	82kΩ	5%	0,6W
3082©	4822 117 12864	82kΩ	5%	0,6W
3083©	4822 051 30222	2,2kΩ	5%	0,06W
3084	4822 050 11002	1kΩ	5%	0,2W

RESISTORS

3085©	4822 051 30222	2,2kΩ	5%	0,06W
3086©	4822 051 30333	33kΩ	5%	0,06W
3087©	4822 051 30221	220Ω	5%	0,06W
3088©	4822 051 30221	220Ω	5%	0,06W
3089©	4822 051 30221	220Ω	5%	0,06W
3090©	4822 051 30221	220Ω	5%	0,06W
3091©	4822 051 30221	220Ω	5%	0,06W
3092©	4822 051 30222	2,2kΩ	5%	0,06W
3093©	4822 051 30222	2,2kΩ	5%	0,06W
3094©	4822 051 30222	2,2kΩ	5%	0,06W
3095©	4822 051 30471	470Ω	5%	0,06W
3096©	4822 051 30331	330Ω	5%	0,06W
3097©	4822 051 30271	270Ω	5%	0,06W
3098©	4822 051 30152	1,5kΩ	5%	0,06W
3099	4822 116 52283	4,7kΩ	5%	0,5W
3100	4822 052 10338	3,3Ω		NFR25
3101©	4822 051 30221	220Ω	5%	0,06W
3102	4822 116 52213	180Ω	5%	0,5W
3103	4822 116 83876	270Ω	5%	0.16W
3104©	4822 051 30272	2,7kΩ	5%	0,06W
3105	4822 116 52175	100Ω	5%	0,5W
3106©	4822 051 30221	220Ω	5%	0,06W
3107©	4822 051 30102	1kΩ	5%	0,06W
3108©	4822 051 30221	220Ω	5%	0,06W
3109©	4822 051 30222	2,2kΩ	5%	0,06W
3110©	4822 051 30221	220Ω	5%	0,06W
3111©	4822 051 30331	330Ω	5%	0,06W
3112©	4822 051 30221	220Ω	5%	0,06W
3113©	4822 051 30221	220Ω	5%	0,06W
3114©	4822 051 30102	1kΩ	5%	0,06W
3115©	4822 051 30221	220Ω	5%	0,06W
3116©	4822 051 30222	2,2kΩ	5%	0,06W
3117©	4822 051 30221	220Ω	5%	0,06W
3118©	4822 051 30221	220Ω	5%	0,06W
3119©	4822 051 30221	220Ω	5%	0,06W
3120©	4822 051 30471	470Ω	5%	0,06W
3121©	4822 051 30221	220Ω	5%	0,06W
3122©	4822 051 30471	470Ω	5%	0,06W
3123	4822 116 83876	270Ω	5%	0.16W
3124©	4822 051 30221	220Ω	5%	0,06W
3125©	4822 051 30221	220Ω	5%	0,06W
3127©	4822 051 30221	220Ω	5%	0,06W
3128©	4822 051 30103	10kΩ	5%	0,06W
3129©	4822 051 30221	220Ω	5%	0,06W
3130©	4822 051 30683	68kΩ	5%	0,06W
3131©	4822 051 30221	220Ω	5%	0,06W
3133©	4822 051 30221	220Ω	5%	0,06W
3134©	4822 051 30222	2,2kΩ	5%	0,06W
3135©	4822 051 30221	220Ω	5%	0,06W
3136©	4822 051 30221	220Ω	5%	0,06W
3137©	4822 051 30221	220Ω	5%	0,06W
3138©	4822 051 30222	2,2kΩ	5%	0,06W
3139©	4822 051 30221	220Ω	5%	0,06W
3140©	4822 051 30222	2,2kΩ	5%	0,06W
3144	4822 052 10338	3,3Ω		NFR25
3145©	4822 051 30471	470Ω	5%	0,06W
3146©	4822 051 30273	27kΩ	5%	0,06W
3147©	4822 051 30222	2,2kΩ	5%	0,06W
3148©	4822 051 30471	470Ω	5%	0,06W
3150©	4822 051 30392	3,9kΩ	5%	0,06W
3151©	4822 051 30392	3,9kΩ	5%	0,06W
3154©	4822 051 30471	470Ω	5%	0,06W
3155©	4822 051 30102	1kΩ	5%	0,06W
3156©	4822 117 13632	100kΩ	1%	0,06W
3158©	4822 051 30471	470Ω	5%	0,06W

ELECTRICAL PARTSLIST Front Board

RESISTORS

3159©	4822 051 30221	220Ω	5%	0,06W
3160©	4822 051 30471	470Ω	5%	0,06W
3161©	4822 051 30222	2,2kΩ	5%	0,06W
3162©	4822 051 30471	470Ω	5%	0,06W
3163©	4822 051 30103	10kΩ	5%	0,06W
3164©	4822 051 30221	220Ω	5%	0,06W
3166©	4822 051 30102	1kΩ	5%	0,06W
3167©	4822 117 13632	100kΩ	1%	0,06W
3168©	4822 051 30221	220Ω	5%	0,06W
3169©	4822 051 30471	470Ω	5%	0,06W
3170	4822 116 52195	47Ω	5%	0,5W
3171©	4822 051 30103	10kΩ	5%	0,06W
3173©	4822 051 30472	4,7kΩ	5%	0,06W
3174©	4822 051 30221	220Ω	5%	0,06W
3175©	4822 051 30221	220Ω	5%	0,06W
3176©	4822 051 30221	220Ω	5%	0,06W
3177©	4822 051 30221	220Ω	5%	0,06W
3178©	4822 051 30221	220Ω	5%	0,06W
3179©	4822 051 30221	220Ω	5%	0,06W
3180©	4822 051 30221	220Ω	5%	0,06W
3181©	4822 051 30221	220Ω	5%	0,06W
3182©	4822 051 30221	220Ω	5%	0,06W
3183©	4822 051 30221	220Ω	5%	0,06W
3184©	4822 051 30479	47Ω	5%	0,06W
3185©	4822 051 30151	150Ω	5%	0,06W
3186©	4822 051 30151	150Ω	5%	0,06W
3187©	4822 051 30151	150Ω	5%	0,06W
3188©	4822 051 30221	220Ω	5%	0,06W
3189©	4822 051 30221	220Ω	5%	0,06W
3190©	4822 051 30221	220Ω	5%	0,06W
3191©	4822 051 30221	220Ω	5%	0,06W
3192©	4822 051 30221	220Ω	5%	0,06W
3193©	4822 051 30221	220Ω	5%	0,06W
3194©	4822 051 30221	220Ω	5%	0,06W
3195©	4822 051 30272	2,7kΩ	5%	0,06W
3196©	4822 051 30152	1,5kΩ	5%	0,06W
3197©	4822 051 30151	150Ω	5%	0,06W
3197©	4822 051 30479	47Ω	5%	0,06W
3200©	4822 051 30222	2,2kΩ	5%	0,06W
3201©	4822 117 12891	220kΩ	1%	0,06W
3202	4822 116 83868	150Ω	5%	0,5W
3203©	4822 051 30103	10kΩ	5%	0,06W
3204	4822 116 83868	150Ω	5%	0,5W
3205	4822 116 52195	47Ω	5%	0,5W
3206	4822 116 83872	220Ω	5%	0,5W
3209©	4822 051 30333	33kΩ	5%	0,06W
3210©	2322 702 60564	560kΩ	5%	0,06W
3211	4822 050 11002	1kΩ	5%	0,2W
3212©	4822 051 30472	4,7kΩ	5%	0,06W
3213©	4822 117 12903	1,8kΩ	1%	0,06W
3214	4822 116 52231	820Ω	5%	0,5W
3215	4822 116 52226	560Ω	5%	0,5W
3216©	4822 051 30391	390Ω	5%	0,062W
3217©	4822 051 30271	270Ω	5%	0,06W
3218	4822 116 83868	150Ω	5%	0,5W
3219	4822 050 11002	1kΩ	5%	0,2W
3220©	4822 051 30272	2,7kΩ	5%	0,06W
3221	4822 050 11002	1kΩ	5%	0,2W
3222©	4822 051 30272	2,7kΩ	5%	0,06W
3223	4822 116 52263	2,7kΩ	5%	0,5W
3224©	4822 051 30103	10kΩ	5%	0,06W
3225	4822 050 21003	10kΩ	2%	0,25W
3226©	4822 051 30223	22kΩ	5%	0,06W
3227©	4822 051 30221	220Ω	5%	0,06W

RESISTORS

3228©	4822 117 11817	1,2kΩ	1%	0,06W
3229	4822 050 11002	1kΩ	5%	0,2W
3232©	4822 051 30472	4,7kΩ	5%	0,06W
3233©	4822 051 30684	680kΩ	5%	0,06W
3303	4822 116 83872	220Ω	5%	0,5W
3304	4822 116 83876	270Ω	5%	0.16W
3305	4822 116 83876	270Ω	5%	0.16W
3306	4822 116 83881	390Ω	5%	0,5W
3308	4822 116 83881	390Ω	5%	0,5W
3312	4822 050 11002	1kΩ	5%	0,2W
3313	4822 116 52226	560Ω	5%	0,5W
3314	4822 116 52226	560Ω	5%	0,5W
3316	4822 050 11002	1kΩ	5%	0,2W
3317©	4822 051 30103	10kΩ	5%	0,06W
3318©	4822 051 30103	10kΩ	5%	0,06W
3319	4822 116 52231	820Ω	5%	0,5W
3321	4822 116 52231	820Ω	5%	0,5W
3323	4822 116 52207	1,2kΩ	5%	0,5W
3326	4822 116 52207	1,2kΩ	5%	0,5W
3330	4822 116 52249	1,8kΩ	5%	0,16W
3339	4822 116 52249	1,8kΩ	5%	0,16W
3340	4822 116 52276	3,9kΩ	5%	0,5W
3341	4822 116 52276	3,9kΩ	5%	0,5W
3342	4822 050 11002	1kΩ	5%	0,2W
3343	4822 050 11002	1kΩ	5%	0,2W
3344©	4822 051 30103	10kΩ	5%	0,06W
3345©	4822 051 30103	10kΩ	5%	0,06W
3346	4822 050 21003	10kΩ	2%	0,25W
3400	4822 101 21204	POTMETER, 20kΩ		
3402©	4822 051 30222	2,2kΩ	5%	0,06W
3403©	4822 051 30105	1MΩ	5%	0,06W
3404©	4822 051 30272	2,7kΩ	5%	0,06W
3405©	4822 051 30272	2,7kΩ	5%	0,06W
3406©	4822 051 30105	1MΩ	5%	0,06W
3407©	4822 051 30102	1kΩ	5%	0,06W
3409©	4822 117 12139	22Ω	5%	0,06W
3410©	4822 051 30181	180Ω	5%	,062W
3411©	4822 051 30682	6,8kΩ	5%	0,06W
3412©	4822 117 12891	220kΩ	1%	0,06W
3413©	4822 051 30103	10kΩ	5%	0,06W
3414©	4822 051 30339	33Ω	5%	0,06W
3415©	4822 051 30102	1kΩ	5%	0,06W
3416©	4822 051 30471	470Ω	5%	0,06W
3417©	4822 117 13632	100kΩ	1%	0,06W
3500©	4822 051 30392	3,9kΩ	5%	0,06W
3501©	4822 051 30103	10kΩ	5%	0,06W
3601©	4822 051 30152	1,5kΩ	5%	0,06W
3602©	4822 051 30479	47Ω	5%	0,06W
3603©	4822 051 30103	10kΩ	5%	0,06W
3605©	4822 051 30221	220Ω	5%	0,06W
3606©	4822 051 30221	220Ω	5%	0,06W
3807©	4822 051 30101	100Ω	5%	0,06W
3809©	4822 051 30101	100Ω	5%	0,06W
4000©	4822 051 30008	CHIP JUMPER 0603		
4001©	4822 051 30008	CHIP JUMPER 0603		
4002©	4822 051 30008	CHIP JUMPER 0603		
4003©	4822 051 30008	CHIP JUMPER 0603		
4004©	4822 051 30008	CHIP JUMPER 0603		
4005©	4822 051 30008	CHIP JUMPER 0603		
4008©	4822 051 30008	CHIP JUMPER 0603		
4009©	4822 051 30008	CHIP JUMPER 0603		
4010©	4822 051 30008	CHIP JUMPER 0603		
4011©	4822 051 30008	CHIP JUMPER 0603		
4012©	4822 051 30008	CHIP JUMPER 0603		
4013©	4822 051 30008	CHIP JUMPER 0603		

ELECTRICAL PARTSLIST Front Board

RESISTORS

4014 ©	4822 051 30008	CHIP JUMPER 0603
4015 ©	4822 051 30008	CHIP JUMPER 0603
4016 ©	4822 051 30008	CHIP JUMPER 0603
4017 ©	4822 051 30008	CHIP JUMPER 0603
4019 ©	4822 051 30008	CHIP JUMPER 0603
4020 ©	4822 051 30008	CHIP JUMPER 0603
4025 ©	4822 051 30008	CHIP JUMPER 0603
4201 ©	4822 051 30008	CHIP JUMPER 0603
4302 ©	4822 051 30008	CHIP JUMPER 0603

COILS

5000	2422 540 98526	RESONATOR 10MHz
5001	2422 543 01069	QUARTZ, 32.768kHz
5002 ©	2422 549 42895	BLM21
5003 ©	2422 549 42895	BLM21
5004 ©	2422 549 42895	BLM21
5005 ©	2422 549 42895	BLM21
5006 ©	2422 549 42895	BLM21
5007	4822 157 62552	2,2µH
5008	4822 157 62552	2,2µH
5009 ©	2422 549 42895	BLM21
5010 ©	2422 549 42895	BLM21
5011 ©	2422 549 42895	BLM21
5012 ©	2422 549 42895	BLM21
5013	4822 157 62552	2,2µH
5200	4822 242 11033	RESONATOR 4,332MHz
5201 ©	2422 549 42895	BLM21
5701	4822 157 62552	2,2µH
5702	4822 157 62552	2,2µH

DIODES

6000	9322 131 65675	LED, LTL-1CHEE
6001	9322 131 65675	LED, LTL-1CHEE
6002	9322 131 65675	LED, LTL-1CHEE
6003	9322 131 65675	LED, LTL-1CHEE
6004	9322 131 65675	LED, LTL-1CHEE
6005	9322 167 73676	LED, LTL-4221NLC-KA
6006	9322 163 23682	LED LTL-353UBK
6007	4822 130 30862	BZX79-C9V1
6008	5322 130 30691	BAW56
6009	8203 303 84850	LED, LTL2R3KFK-071A
6010	5322 130 30691	BAW56
6012	4822 130 30862	BZX79-C9V1
6014	5322 130 30691	BAW56
6015	5322 130 30691	BAW56
6016	5322 130 30691	BAW56
6017	5322 130 30691	BAW56
6018	5322 130 30691	BAW56
6019	5322 130 30691	BAW56
6020	5322 130 30691	BAW56
6021	5322 130 30691	BAW56
6022	5322 130 30691	BAW56
6023	5322 130 30691	BAW56
6024	5322 130 30691	BAW56
6025	5322 130 30691	BAW56
6026	5322 130 30691	BAW56
6027	5322 130 30691	BAW56
6028	5322 130 30691	BAW56
6029	5322 130 30691	BAW56
6030	5322 130 30691	BAW56
6031	5322 130 30691	BAW56
6032	5322 130 30691	BAW56
6033	5322 130 30691	BAW56
6034	5322 130 30691	BAW56
6035	5322 130 30691	BAW56
6036	5322 130 30691	BAW56

DIODES

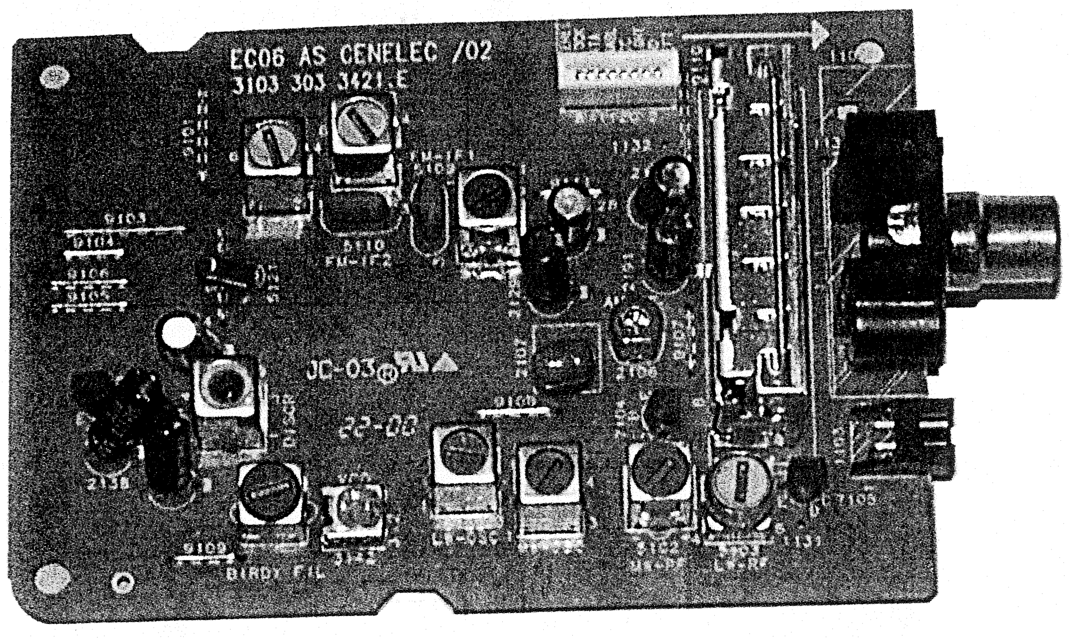
6037 ©	5322 130 34331	BAV70
6038	5322 130 30691	BAW56
6039	5322 130 30691	BAW56
6040	4822 130 30862	BZX79-C9V1
6041	4822 130 30862	BZX79-C9V1
6200 ©	5322 130 34331	BAV70
6300	9322 131 65675	LED, LTL-1CHEE
6600	9322 163 23682	LED LTL-353UBK
6601	9322 131 65675	LED, LTL-1CHEE
6602	9322 131 65675	LED, LTL-1CHEE

TRANSISTORS

7005 ©	4822 130 60511	BC847B
7006 ©	4822 130 60511	BC847B
7007 ©	4822 130 60511	BC847B
7008 ©	4822 130 60373	BC856B
7011 ©	4822 130 60511	BC847B
7012 ©	4822 130 60511	BC847B
7014 ©	4822 130 60511	BC847B
7015 ©	4822 130 60511	BC847B
7400 ©	4822 130 60373	BC856B
7401 ©	4822 130 60511	BC847B
7402 ©	4822 130 60511	BC847B
7600 ©	4822 130 60511	BC847B
7601 ©	4822 130 60511	BC847B

INTEGRATED CIRCUITS

7001 ©	9322 158 26671	M30625FGAGP, MICROPROCESSOR
7002 ©	9322 168 17668	M66005-0001FP, DISPLAY DRIVER
7003 ©	9322 145 26668	M24C02-WMN6, EEPROM
7004 ©	4822 209 15449	74HC4094D, SHIFT REGISTER
7200	4822 209 31981	SAA6579T/V1, RDS DECODER


ECO6 AS CENELEC /02
3103 303 3421.E
FM-IF1
FM-IF2
JC-03
BIRDY FIL
LW-OSC
MW-RF
LW-RF

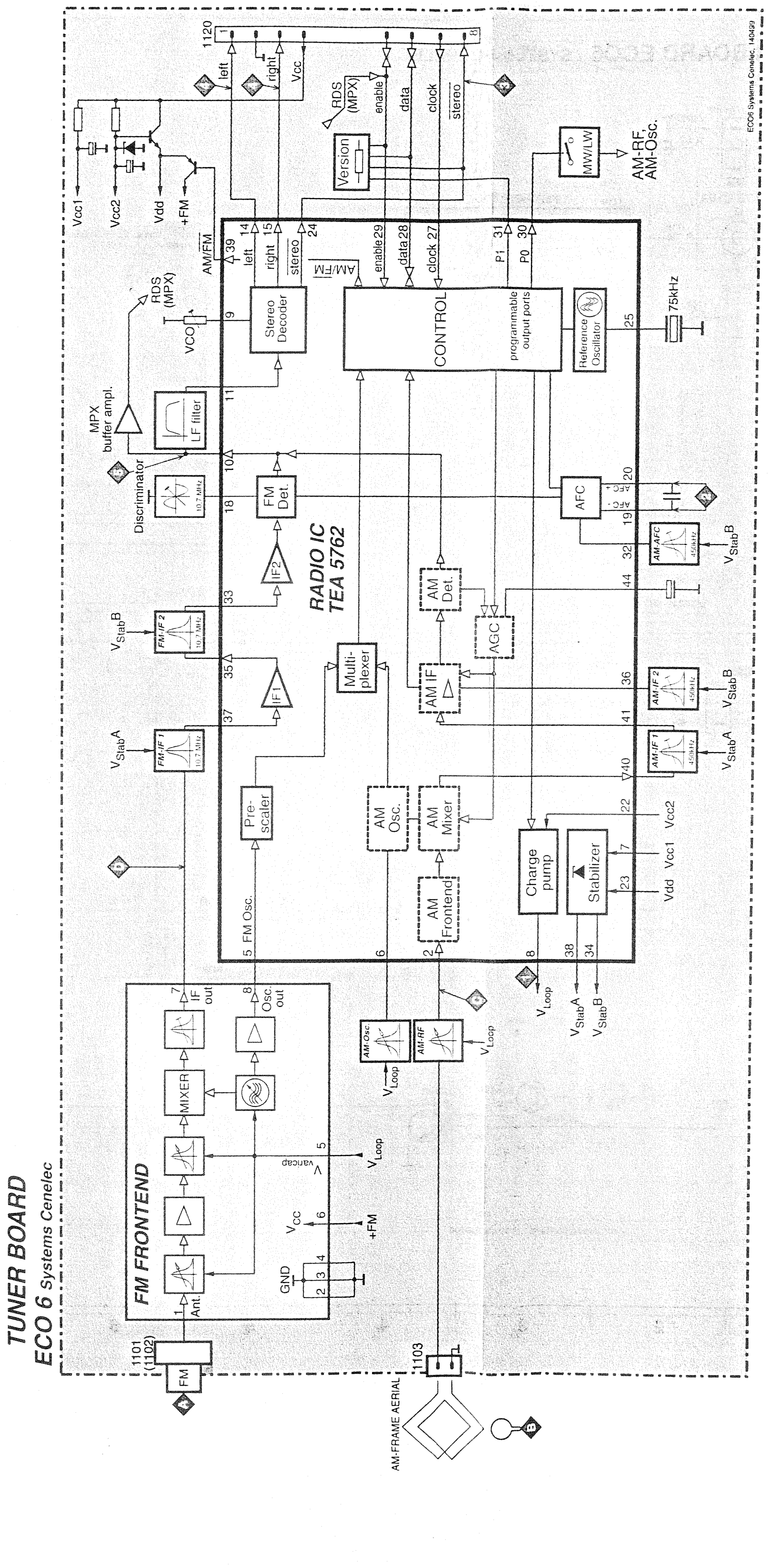
ECO6 Tuner Board

version: ***SYSTEMS CENELEC***

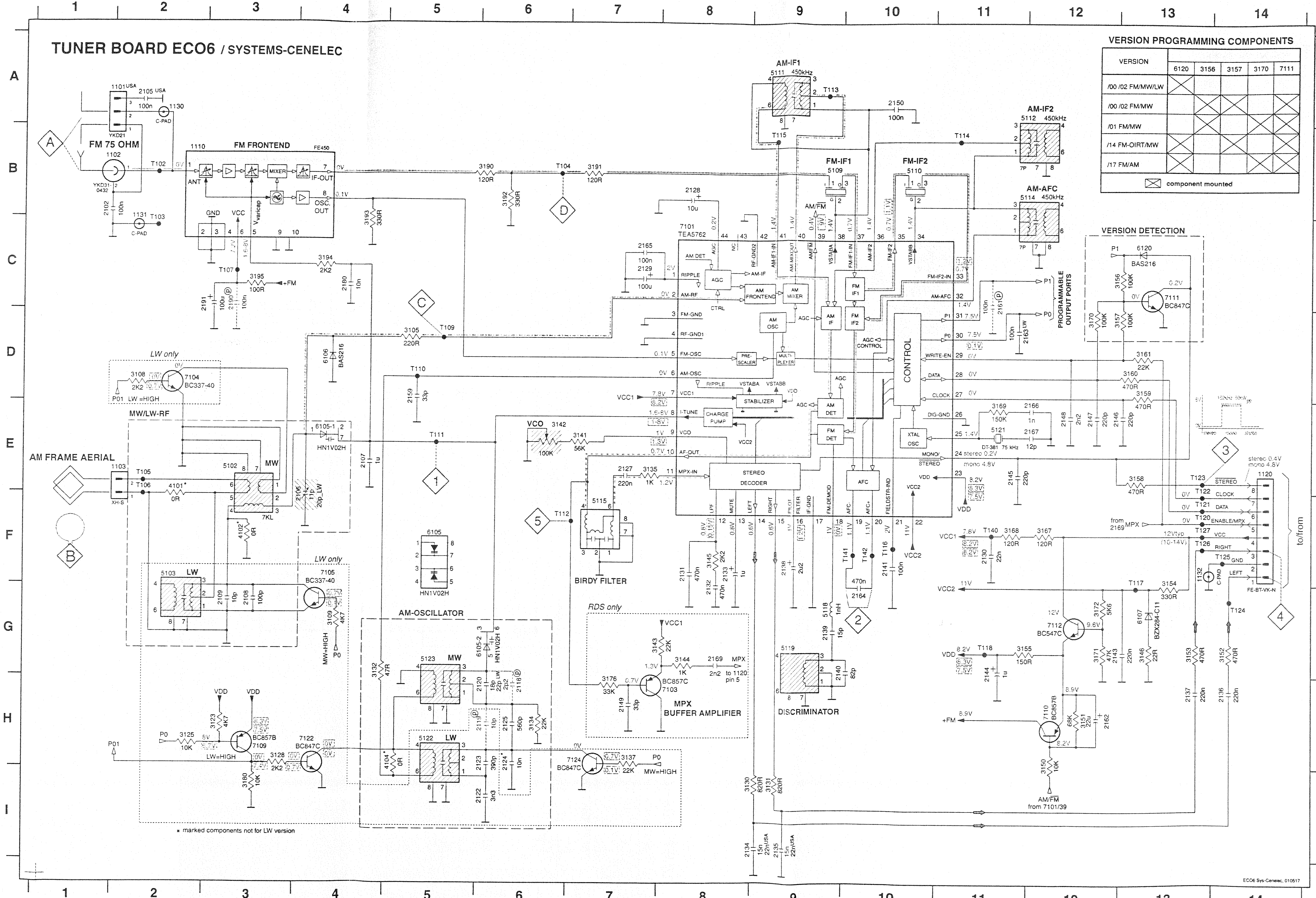
TABLE OF CONTENTS

Blockdiagram 7-1
Schematic Diagram 7-2
Component Layout 7-3
Adjustment table 7-3
Electrical Partslist 7-4

BLOCK DIAGRAM


TUNER BOARD
ECO 6 Systems Cenelec
RADIO IC TEA 5762
FM FRONTEND
Ant.
MIXER
IF out
Osc. out
Vvaricap
Vcc
GND
+FM
VLoop
1101 (1102)
FM
1103
AM-FRAME AERIAL
AM-Osc
AM-RF
Pre-scaler
5 FM Osc.
AM Osc.
AM Mixer
AM Frontend
AM IF
AM Det.
AGC
Multi-plexer
IF1
IF2
FM Det
FM-IF 1
FM-IF 2
VStabA
VStabB
Discriminator
MPX buffer ampl.
LF filter
VCO
RDS (MPX)
Stereo Decoder
CONTROL
programmable output ports
Reference Oscillator
75kHz
AFC
AM-AFC
AM-IF 1
AM-IF 2
Charge pump
Stabilizer
Vdd
Vcc1
Vcc2
AM/FM
left
right
stereo
enable
data
clock
P1
P0
Version
MW/LW
AM-RF, AM-Osc.
1120
+FM

TUNER BOARD ECO6 / SYSTEMS-CENELEC


FM 75 OHM
FM FRONTEND
FE450
ANT
MIXER
IF-OUT
OSC. OUT
GND
VCC
Vvaricap
AM FRAME AERIAL
MW/LW-RF
LW only
MW
LW
7KL
HN1V02H
AM-OSCILLATOR
AM-IF1
450kHz
AM-IF2
450kHz
FM-IF1
FM-IF2
AM-AFC
450kHz
7101
TEA5762
AGC
AM FRONTEND
AM MIXER
AM OSC
AM IF
FM IF1
FM IF2
AGC CONTROL
CONTROL
PRE-SCALER
MULTI-PLEXER
STABILIZER
CHARGE PUMP
AM DET
FM DET
XTAL OSC
STEREO DECODER
AFC
VCO
BIRDY FILTER
RDS only
MPX BUFFER AMPLIFIER
DISCRIMINATOR
VERSION DETECTION
PROGRAMMABLE OUTPUT PORTS
to/from
FE-BT-VK-N
STEREO
CLOCK
DATA
ENABLE/MPX
VCC
RIGHT
GND
LEFT
AM/FM from 7101/39
* marked components not for LW version
ECO6 Sys-Cenelec. 010517

VERSION PROGRAMMING COMPONENTS

VERSION					
	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒

☒ component mounted

1101	A2
1102	B1
1103	E2
1110	B2
1120	E14
1130	A2
1131	C2
1132	F13
2102	B1
2105	A2
2106	E3
2107	E4
2108	G3
2109	G3
2118	H6
2119	H6
2120	H6
2122	I6
2123	H6
2124	H6
2125	H6
2127	E7
2128	B8
2129	C7
2130	F11
2131	F8
2132	F8
2133	F8
2134	I8
2135	I9
2136	H14
2137	H13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	E11
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2159	D5
2161	C11
2162	H12
2163	D11
2164	G10
2165	C7
2166	E11
2167	E11
2169	G8
2180	C4
2190	C3
2191	C3
3105	D5
3108	D2
3109	G4
3123	H3
3125	H2
3128	H3
3130	I9
3131	I9
3132	G4
3134	H6
3135	E7
3137	H7
3141	E7
3142	E6
3143	G7
3144	G8
3145	F8
3146	G13
3150	H12
3151	H12
3152	G14
3153	G13
3154	F13
3155	G12
3156	C12
3157	D12
3158	E13
3159	D13
3160	D13
3161	D13
3167	F12
3168	F11
3169	E11
3170	D12
3171	G12
3172	G12
3176	H7
3180	I3
3190	B6
3191	B7
3192	B6
3193	B4
3194	C4
3195	C3
4101	E2
4102	F3
4104	H5
5102	E3
5103	F2
5109	B9
5110	B10
5111	A9
5112	A11
5114	B11
5115	E7
5118	G9
5119	G9
5121	E11
5122	H5
5123	G5
6105-1	E4
6105-2	G6
6106	D4
6107	G13
6120	C13
7101	C8
7103	H8
7104	D2
7105	F4
7109	H3
7110	H12
7111	C13
7112	G12
7122	H4
7124	H7
T102	B2
T103	B2
T104	B6
T105	E2
T106	E2
T107	C3
T109	D5
T110	D5
T111	E5
T112	F7
T113	A9
T114	B11
T116	F10
T117	F13
T118	G11
T120	F13
T121	F13
T122	E13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T140	F11
T141	F10
T142	F10

LEGEND

* ... only assembled in FM/AM-version
ⓟ...for provision only
USA ... for USA version only
LW ... for LW version only

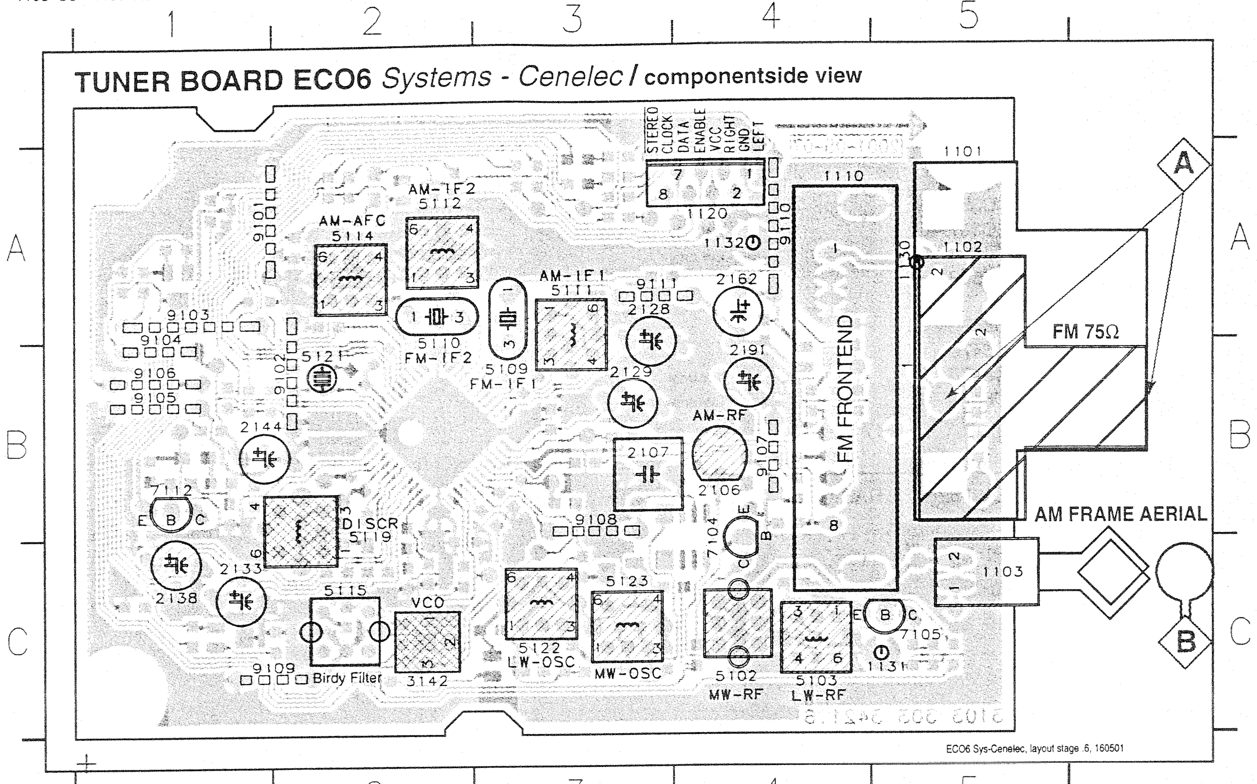
SMD jumper
41xx
0R

EVM

...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while set is tuned to a strong transmitter

Signal path
- FM
- AM
- MPX (Audio Frequency)
- AF - left/right

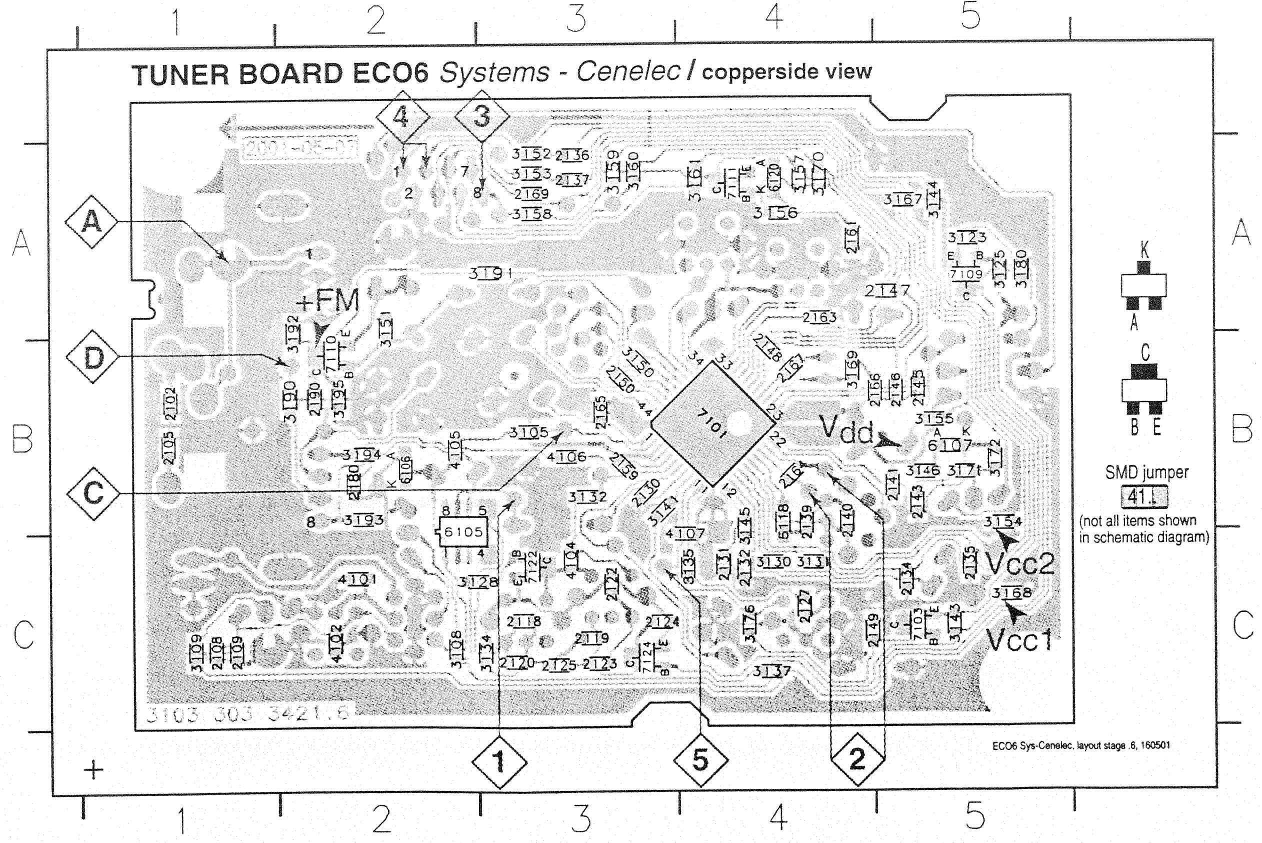
1101 B5	1110 B4	1131 C5	2107 B3	2133 C1	2162 A4	5102 C4	5110 A2	5114 A2	5121 B2	7104 C4	9101 A2	9104 B1	9107 B4	9110 A4
1102 B5	1120 A4	1132 A4	2128 A3	2138 B1	2191 B4	5103 C4	5111 A3	5115 C2	5122 C3	7105 C5	9102 B2	9105 B1	9108 B3	9111 A3
1103 C5	1130 A5	2106 B4	2129 B3	2144 B1	3142 C2	5109 B3	5112 A2	5119 B2	5123 C3	7112 B1	9103 A1	9106 B1	9109 C2	


TUNER BOARD ECO6 *Systems - Cenelec* **/ componentside view**

1
2
3
4
5
A
B
C
STEREO
CLOCK
DATA
ENABLE
VCC
RIGHT
GND
LEFT
1101
1110
1120
1132
1102
1130
AM-IF2
5112
AM-AFC
5114
AM-IF1
5111
9111
2128
2162
9101
9103
9104
9105
9106
5121
5110
FM-IF2
5109
FM-IF1
2129
2191
2144
2107
2106
AM-RF
9107
9102
FM FRONTEND
FM 75Ω
AM FRAME AERIAL
7112
E B C
DISCR
5119
9108
7104
2133
2138
5115
VCO
5123
5122
LW-OSC
MW-OSC
5102
MW-RF
5103
LW-RF
7105
1131
1103
9109
Birdy Filter
3142
A
B

ECO6 Sys-Cenelec, layout stage .6, 160501

2102 B1	2120 C3	2130 B3	2137 A3	2146 B5	2161 A4	2169 A3	3123 A5	3134 C3	3145 C4	3154 B5	3160 A3	3171 B5	3192 A2	4104 C3	6106 B2	7110 B2
2105 B1	2122 C3	2131 C4	2139 B4	2147 A5	2163 A4	2180 B2	3125 A5	3135 C4	3146 B5	3155 B5	3161 A4	3172 B5	3193 B2	4105 B2	6107 B5	7111 A4
2108 C1	2123 C3	2132 C4	2140 B4	2148 B4	2164 B4	2190 B2	3128 C2	3137 C4	3150 B3	3156 A4	3167 A5	3176 C4	3194 B2	4106 B3	6120 A4	7122 C3
2109 C1	2124 C3	2134 C5	2141 B5	2149 C4	2165 B3	3105 B3	3130 C4	3141 B3	3151 A2	3157 A4	3168 C5	3180 A5	3195 B2	4107 C4	7101 B4	7124 C3
2118 C3	2125 C3	2135 C5	2143 B5	2150 B3	2166 B5	3108 C2	3131 C4	3143 C5	3152 A3	3158 A3	3169 B4	3190 B2	4101 C2	5118 C4	7103 C5	
2119 C3	2127 C4	2136 A3	2145 B5	2159 B3	2167 B4	3109 C1	3132 B3	3144 A5	3153 A3	3159 A3	3170 A4	3191 A3	4102 C2	6105 B2	7109 A5	


TUNER BOARD ECO6 *Systems - Cenelec* **/ copperside view**

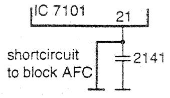
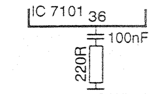
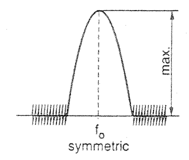
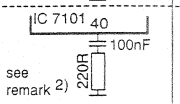
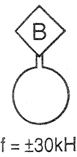
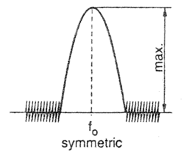
1
2
3
4
5
A
B
C
4
3
A
D
C
+FM
Vdd
Vcc2
Vcc1
7101
6105
4101
4106
4107
3191
3193
3194
K
A
C
B E
SMD jumper
411
1
5
2
+

(not all items shown in schematic diagram)

ECO6 Sys-Cenelec, layout stage .6, 160501

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO6 Cenelec FM/MW - and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check	1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	D	 IC 7101 21 shortcircuit to block AFC 2141	5119	2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz 1)
FM RF (channel separation)	Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.					
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R	5111	5	 max. f_o symmetric
			 IC 7101 40 100nF 220R see remark 2)	5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0mV ±2mV
AM RF 3)						
MW	1494kHz	B  Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	5	 max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		

ECO6 Sys Cenelec, 190599

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!
MW has to be aligned before LW.

↕ Repeat

Electrical Partslist *ECO6* SYSTEMS-CENELEC

MISCELLANEOUS

1101	2422 015 19376	SOCKET CLICKFIT 2P	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR, 2 POLE	
1110	2422 542 90071	FM FRONTEND	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2102 ©	4822 126 13838	100nF	10%	50V	not USA
2105 ©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00204	TRIMCAP. 4,2 - 20pF, N750			LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450			FM/AM only
2107	4822 121 51319	1µF	20%	50V	
2108 ©	5322 122 32531	100pF	5%	50V	LW only
2109 ©	5322 122 32448	10pF	5%	50V	LW only
2120 ©	4822 126 13689	18pF	1%	63V	FM/AM only
2120 ©	5322 122 32658	22pF	5%	50V	LW only
2122 ©	4822 122 33891	3,3nF	10%	63V	LW only
2123 ©	2020 552 93494	390pF	1%	50V	LW only
2124 ©	4822 122 33177	10nF	20%	50V	FM/AM only
2125 ©	2020 552 96199	560pF	1%	50V	
2127 ©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130 ©	5322 122 32654	22nF	10%	63V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134 ©	3198 017 31530	15nF	10%	50V	not USA
2134 ©	5322 122 32654	22nF	10%	63V	USA only
2135 ©	3198 017 31530	15nF	10%	50V	not USA
2135 ©	3198 017 32230	22nF	10%	25V	USA only
2136 ©	4822 126 14076	220nF	20%	25V	
2137 ©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2140 ©	4822 126 13695	82pF	1%	63V	
2141 ©	4822 126 13838	100nF	10%	50V	
2143 ©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1µF	20%	63V	
2145 ©	4822 122 33575	220pF	5%	50V	
2146 ©	4822 122 33575	220pF	5%	50V	
2147 ©	4822 122 33575	220pF	5%	50V	
2148 ©	4822 122 33127	2,2nF	10%	63V	
2149 ©	5322 122 32659	33pF	5%	50V	RDS only
2150 ©	4822 126 13838	100nF	10%	50V	
2159 ©	5322 122 31151	22µF	20%	50V	
2163 ©	4822 126 13838	100nF	10%	50V	LW only
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 13838	100nF	10%	50V	
2166 ©	5322 122 31647	1nF	10%	63V	
2167 ©	4822 122 33926	12pF	5%	50V	
2169 ©	4822 122 33127	2,2nF	10%	63V	RDS only
2180 ©	3198 017 31030	10nF	10%	50V	
2190 ©	4822 126 13838	100nF	10%	50V	
2191	4822 124 40178	100µF	20%	10V	

RESISTORS

3105 ©	4822 117 11503	220Ω	5%	0,1W	
3108 ©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3109 ©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3123 ©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3125 ©	4822 117 10833	10kΩ	1%	0,1W	LW only

RESISTORS

3128 ©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3130 ©	3198 021 38210	820Ω	5%	0,06W	
3131 ©	3198 021 38210	820Ω	5%	0,06W	
3132 ©	4822 051 20479	47Ω	5%	0,1W	
3134 ©	4822 051 20223	22kΩ	5%	0,1W	
3135 ©	3198 021 31020	1kΩ	5%	0,06W	
3137 ©	4822 051 20223	22kΩ	5%	0,1W	LW only
3141 ©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143 ©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144 ©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3150 ©	4822 117 10833	10kΩ	1%	0,1W	
3151 ©	4822 051 20683	68kΩ	5%	0,1W	
3152 ©	4822 051 20471	470Ω	5%	0,1W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154 ©	4822 117 13577	330Ω	1%	0,1W	
3155 ©	4822 117 10353	150Ω	5%	0,1W	
3156 ©	4822 117 10837	100kΩ	1%	0,1W	
3157 ©	4822 117 10837	100kΩ	1%	0,1W	
3158 ©	4822 051 20471	470Ω	5%	0,1W	
3159 ©	4822 051 20471	470Ω	5%	0,1W	
3160 ©	4822 051 20471	470Ω	5%	0,1W	
3161 ©	4822 051 20223	22kΩ	5%	0,1W	
3167 ©	4822 051 20121	120Ω	5%	0,1W	
3168 ©	4822 051 20121	120Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170 ©	4822 117 10837	100kΩ	1%	0,1W	
3171 ©	4822 117 10834	47kΩ	1%	0,1W	
3172 ©	4822 051 20562	5,6kΩ	5%	0,1W	
3176 ©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3180 ©	4822 117 10833	10kΩ	1%	0,1W	LW only
3190 ©	4822 051 20121	120Ω	5%	0,1W	
3191 ©	4822 051 20121	120Ω	5%	0,1W	
3192 ©	4822 117 13577	330Ω	1%	0,1W	
3193 ©	4822 117 13577	330Ω	1%	0,1W	
3194 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3195 ©	4822 051 20101	100Ω	5%	0,1W	
4101 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4102 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4104 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4105 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4107 ©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW	
5103	2422 549 44107	RF-COIL LW	LW only
5109	4822 157 71639	FM-IF FILTER 10,7MHz	
5110	4822 242 70665	FM-IF FILTER 10,7MHz	
5111	2422 549 44023	AM-IF FILTER 450kHz	
5112	4822 157 70302	AM-IF FILTER 450kHz	
5114	4822 157 70302	AM-IF FILTER 450kHz	
5115	4822 157 71636	ANTI BIRDY FILTER	
5118 ©	2422 535 95881	100nH	
5119	4822 157 11443	DISCRIMINATOR COIL	
5121	4822 242 10261	QUARTZ 75kHz	
5122	2422 549 44108	RF-COIL, LW-OSCILLATOR	LW only
5123	2422 549 44108	RF-COIL, MW-OSCILLATOR	

DIODES

6105 ©	4822 130 83075	HN1V02H
6106 ©	4822 130 83757	BAS216
6107 ©	9340 386 90115	BZX284-C11
6120 ©	4822 130 83757	BAS216

TRANSISTORS

7103 ©	5322 130 42756	BC857C	RDS only
7104	9322 003 64676	TBC337-40	LW only
7105	9322 003 64676	TBC337-40	LW only
7109 ©	4822 130 60373	BC856B	LW only
7110 ©	4822 130 60373	BC856B	
7111 ©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122 ©	5322 130 42755	BC847C	LW only
7124 ©	5322 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC

AF9 BOARD

TABLE OF CONTENTS

Brief Introduction of the AF9 Board 8-1
AF9 Board - Component layout 8-2
AF9 Board - Chip layout 8-3
AF9 Board - Circuit Diagram (Part 1) 8-4
AF9 Board - Circuit Diagram (Part 2) 8-5
AF9 Board - Circuit Diagram (Part 3) 8-6
Video Out Cinch part - Layout & Circuit diagram 8-7
Electrical parts list 8-7

BRIEF INTRODUCTION OF THE AF9 BOARD

The AF9 Board consists of the following features :

a. TDA7468D IC

TDA7468D IC (7501) which includes functions such as source selection, loudness control, dynamic bass control, treble control, volume control and muting function. Sound features such as ALC, DBB, DSC and IS are controllable via I^2C Bus from the microprocessor.

The TDA7468D IC caters for 4 input sources namely TUNER, TAPE, CD and AUX. It also has a Mic mix input. In our application, software will switch the input source to previous source MUTE during STANDBY mode and some other occasions where noise from other input source is undesirable.

Note that the input to the TDA7468D IC must be ac coupled to prevent 'polp' noise.
Input networks are included to provide appropriate attenuation for various sources.

b. SIMPLE MIC MIXING

The AF9 Board has provisions which can be configured to cater for one of the following:
MM : which caters for Mic mixing with additional Mic amplifier board.
NM : non Mic mixing.

c. DOLBY PRO LOGIC (DPL) INTERFACE

The AF9 Board has provisions which can be configured to cater for DPL.

d. LINE OUT

Line out cinch socket for connection to external amplifier.

e. SUB-WOOFER OUT

Sub-woofer out cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND

Incredible surround effect using transistor circuit to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER

Headphone amplifier to drive 32 ohm to 1kohm headphone.

h. CD STANDBY CONTROL

CD Standby Control circuit which switches on the supply to CD servo control IC, digital out buffer IC, HF circuit and the laser light pen in CD mode only.

i. ATTENUATION NETWORK

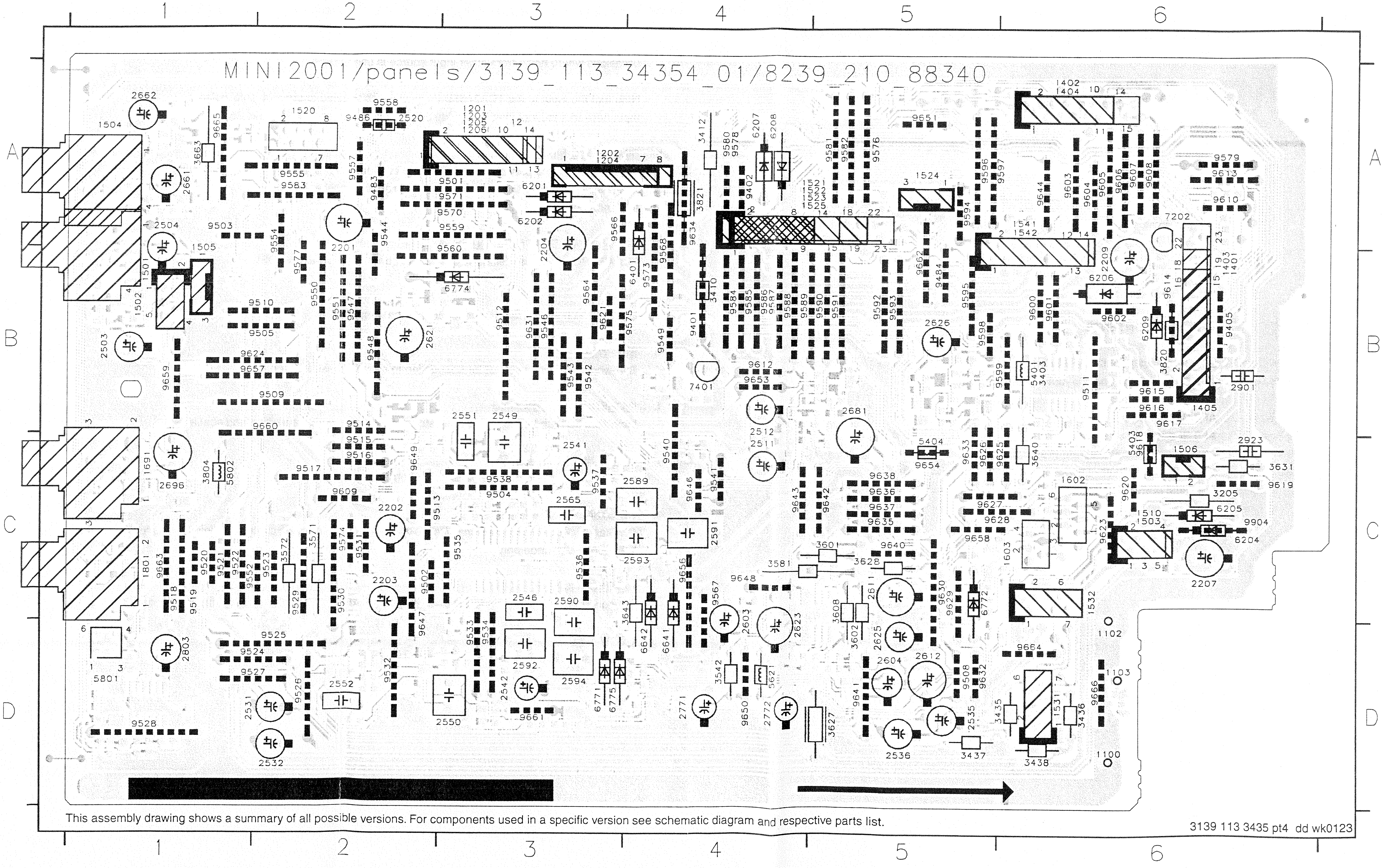
Attenuation network is provided at the output of the AF9 Board for interfacing with power board of different output power.

j. CD DIGITAL OUT

CD Digital out cinch socket for connection to external digital audio decoders.

AF9 BOARD - COMPONENT LAYOUT

1100	D6	1503	C6	1603	C6	2535	D5	2603	D4	2923	C6	3627	D5	6202	A3	9401	B4	9513	C2	9529	C2	9547	B2	9570	A3	9587	B4	9603	A6	9620	C6	9637	C5	9657	B1
1102	D6	1504	A1	1691	C1	2536	D5	2604	D5	3205	C6	3628	C5	6204	C6	9402	A4	9514	B2	9530	C2	9548	B2	9571	A3	9588	B4	9604	A6	9621	B3	9638	C5	9658	C5
1103	D6	1505	B1	1801	C1	2541	C3	2611	C5	3403	B6	3631	C6	6205	C6	9405	B6	9515	C2	9531	C2	9549	B4	9573	B4	9589	B4	9605	A6	9623	C6	9640	C5	9659	B1
1201	A3	1506	C6	2201	B2	2542	D3	2612	D5	3410	B4	3640	C6	6206	B6	9483	A2	9516	C2	9532	D2	9550	B2	9574	C2	9590	B5	9606	A6	9624	B1	9641	D5	9660	B2
1202	A3	1510	C6	2202	C2	2546	C3	2621	B2	3412	A4	3643	C4	6207	A4	9484	B5	9517	C2	9533	D3	9551	B2	9575	B4	9591	B5	9607	A6	9625	C6	9642	C5	9661	D3
1203	A3	1520	A2	2203	C2	2549	B3	2623	D4	3435	D6	3663	A1	6208	A4	9486	A2	9518	C1	9534	D3	9552	C1	9576	A5	9592	B5	9608	A6	9626	C5	9643	C4	9662	B5
1204	A3	1521	A5	2204	B3	2550	D3	2625	D5	3436	D6	3804	C1	6209	B6	9501	A3	9519	C1	9535	C3	9554	A2	9577	B2	9593	B5	9609	C2	9627	C5	9644	A6	9663	C1
1205	A3	1522	A5	2207	C6	2551	B3	2626	B5	3437	D5	3820	B6	6401	B4	9502	C2	9520	C1	9536	C3	9555	A2	9578	A4	9594	A5	9610	A6	9628	C5	9646	C4	9664	D6
1206	A3	1523	A5	2209	B6	2552	D2	2661	A1	3438	D6	3821	A4	6641	D4	9503	A1	9521	C1	9537	C3	9557	A2	9579	A6	9595	B5	9612	B4	9629	C5	9647	D2	9665	A1
1401	B6	1524	A5	2503	B1	2565	C3	2662	A1	3542	D4	5401	B6	6642	D4	9504	C3	9522	C1	9538	C3	9558	A2	9580	A4	9596	A5	9613	A6	9630	C5	9648	C4	9666	D6
1402	A6	1525	A5	2504	A1	2589	C4	2681	B5	3571	C2	5403	C6	6771	D3	9505	B2	9523	C2	9540	C4	9559	A3	9581	A5	9597	A6	9614	B6	9631	B3	9649	C2	9904	C6
1403	B6	1531	D6	2511	C4	2590	C3	2696	C1	3572	C2	5404	C5	6772	C5	9508	D5	9524	D2	9541	C4	9560	B3	9582	A5	9598	B5	9615	B6	9632	D5	9650	D4		
1404	A6	1532	C6	2512	B4	2591	C4	2771	D4	3581	C4	5621	D4	6774	B3	9509	B2	9525	D2	9542	B3	9564	B3	9583	A2	9599	B6	9616	B6	9633	C5	9651	A5		
1405	B6	1541	A6	2520	A2	2592	D3	2772	D4	3601	C5	5801	D1	6775	D3	9510	B2	9526	D2	9543	B3	9566	A3	9584	B4	9600	B6	9617	B6	9634	A4	9653	B4		
1501	B1	1542	A6	2531	D1	2593	C4	2803	D1	3602	D5	5802	C1	7202	A6	9511	B6	9527	D2	9544	A2	9567	C4	9585	B4	9601	B6	9618	C6	9635	C5	9654	C5		
1502	B1	1602	C6	2532	D2	2594	D3	2901	B6	3608	C5	6201	A3	7401	B4	9512	B3	9528	D1	9546	B3	9568	B4	9586	B4	9602	B6	9619	C6	9636	C5	9656	C4		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9904
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2901
1405
7202
1403
1401
5401
3403
5403
9618
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3627
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5621
2771
2772
1102
1103
1100
9651
9579
9613
9610
9664

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3435 pt4 dd wk0123

AF9 BOARD - CHIP LAYOUT

2205	A4
2206	C5
2208	B1
2210	B1
2211	B1
2401	B1
2402	B1
2403	B1
2404	B2
2501	B6
2502	A6
2505	C4
2506	C5
2507	C5
2513	C3
2514	C3
2515	C4
2516	D4
2521	A5
2522	A5
2523	C4
2524	C5
2533	C4
2534	D4
2543	C4
2544	D4
2547	C4
2548	D4
2553	C4
2554	D5
2555	C4
2556	D4
2557	C5
2558	D5
2559	C4
2560	D5
2561	B5
2562	D5
2563	C3
2564	D4
2567	C4
2568	D4
2581	D3
2582	D2
2583	C3
2584	D2
2585	C3
2586	D2
2587	C3
2588	D2
2601	D3
2602	C3
2605	C3
2606	D3
2607	C3
2608	D3
2609	C2
2610	D2
2622	B2
2624	D3
2641	C3
2642	C4
2653	A5
2654	A4
2663	A6
2664	A6
2665	A6
2666	A6
2667	A6
2669	B6
2682	B2
2683	B3
2691	B4
2697	C6
2698	C6
2707	C4
2708	C4
2801	C6
2802	D6
2804	D6
2805	D6
2806	D6
2807	C6
2808	C6
2809	D6
2810	D6
2902	D1
2904	A6
2905	C2
2908	C3
2921	C6
2922	C1
2924	C6
2950	A1
2951	A2
2952	A2
2953	A2
2954	A5
2955	B1
3201	A5
3202	A4
3401	B1
3402	B1
3404	B1
3405	B1
3406	B1
3408	B3
3409	B3
3501	B6
3502	A6
3503	B6
3504	A6
3505	B6
3506	B6
3507	B6
3508	B6
3511	B3
3512	B3
3513	C3
3514	C3
3521	A5
3522	A5
3523	A5
3524	A5
3525	C4
3526	C4
3531	D1
3532	D1
3533	D2
3534	D1
3541	C3
3543	C4
3544	D4
3545	C4
3546	D4
3547	C4
3548	D4
3549	C4
3550	D4
3551	C4
3552	D5
3553	C4
3554	D5
3555	C4
3556	D5
3557	C4
3558	D5
3559	B5
3560	D5
3561	B5
3562	D5
3563	C5
3564	D5
3565	C4
3566	D5
3567	C4
3568	D4
3569	B4
3570	D4
3582	D2
3591	C4
3592	D4
3593	C3
3594	D4
3605	C1
3606	D2
3607	C2
3609	C2
3610	D2
3611	C2
3612	D2
3613	C2
3614	C2
3615	C2
3616	C2
3619	C2
3620	C1
3621	B2
3622	B2
3623	B2
3624	B2
3625	B2
3626	B2
3629	C2
3630	C1
3633	B5
3634	B5
3635	C3
3636	B4
3637	C3
3638	B4
3639	B5
3641	D3
3642	D3
3644	A2
3645	C4
3646	C4
3651	B4
3652	C1
3653	A4
3654	B4
3655	B5
3656	A4
3657	A4
3658	A4
3659	C2
3660	D2
3661	A6
3662	A6
3664	A6
3665	A6
3666	A6
3667	A6
3668	A6
3669	A6
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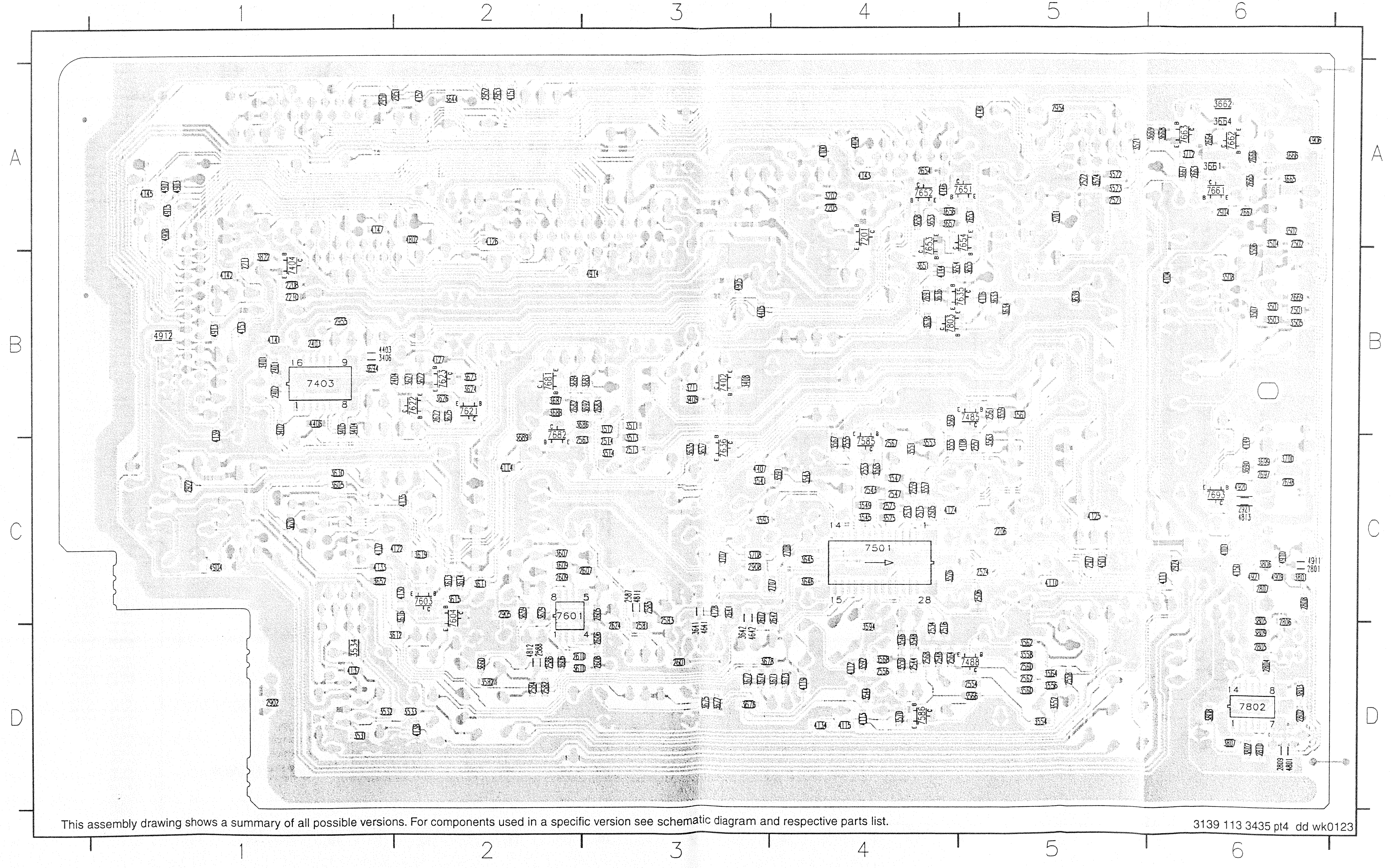
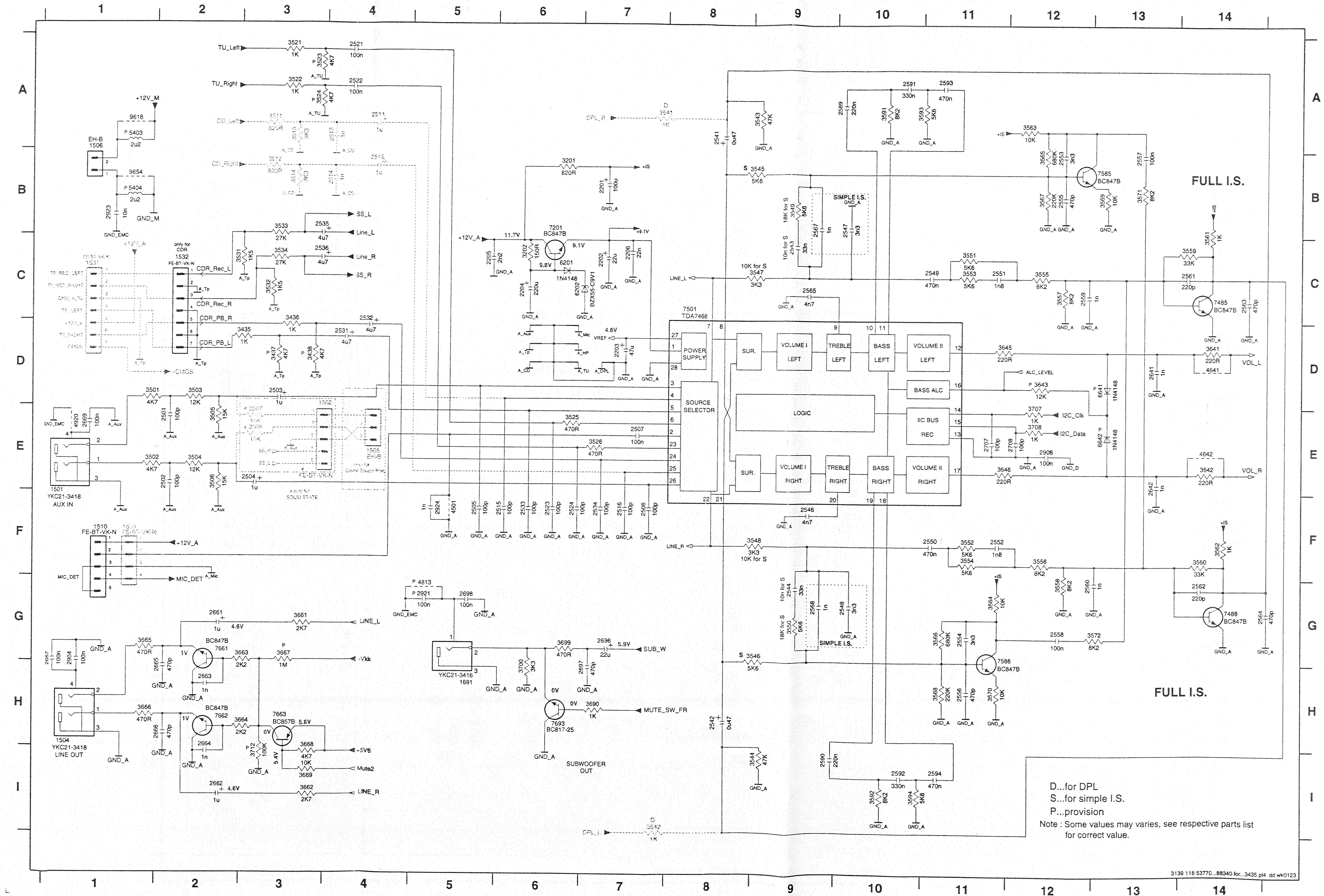
3672	D3
3673	D4
3674	D3
3675	D3
3676	D3
3677	D3
3678	D3
3683	B3
3684	B2
3686	B3
3687	B2
3688	B2
3689	C2
3690	C6
3692	B3
3694	B1
3699	C6
3700	C6
3707	C3
3708	C3
3711	B3
3712	A6
3801	C6
3802	D6
3803	D6
3805	C6
3806	C6
3807	D6
3808	D6
3809	D6
3822	B1
4100	A4
4101	C6
4104	B6
4108	C5
4110	C5
4111	C6
4112	D4
4113	D4
4114	C2
4115	D4
4116	B5
4119	D4
4122	C2
4124	C4
4125	C5
4126	A2
4127	B2
4128	C3
4130	C2
4132	C1
4133	C1
4134	D4
4135	C2
4137	D1
4138	D2
4139	B1
4141	B1
4142	B1
4143	A4
4144	B4
4145	A1
4146	A4
4147	A1
4148	A5
4149	C6
4150	C6
4151	A2
4152	A2
4153	B1
4403	B1
4404	A4
4405	B3
4406	B1
4407	C3
4501	C5
4641	D3
4642	D3
4801	D6
4802	A2
4811	C3
4812	D2
4813	C6
4903	A1
4904	C1
4905	B3
4906	A6
4907	A1
4908	A1
4909	C6
4910	C6
4911	C6
4912	B1
4913	B1
4914	B3
4915	A1
4920	C6
4921	C6
7201	A4
7402	B3
7403	B1
7404	B1
7485	B5
7488	D5
7501	C4
7585	C4
7586	D4
7601	C2
7603	C2
7604	C2
7621	B2
7622	B2
7623	B2
7635	B5
7636	C3
7651	A5
7652	A4
7653	A4
7654	A5
7661	A6
7662	A6
7663	A6
7681	B2
7682	B2
7693	C6
7802	D6
7803	B4



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3435 pt4 dd wk0123

AF9 BOARD - CIRCUIT DIAGRAM (PART 1)



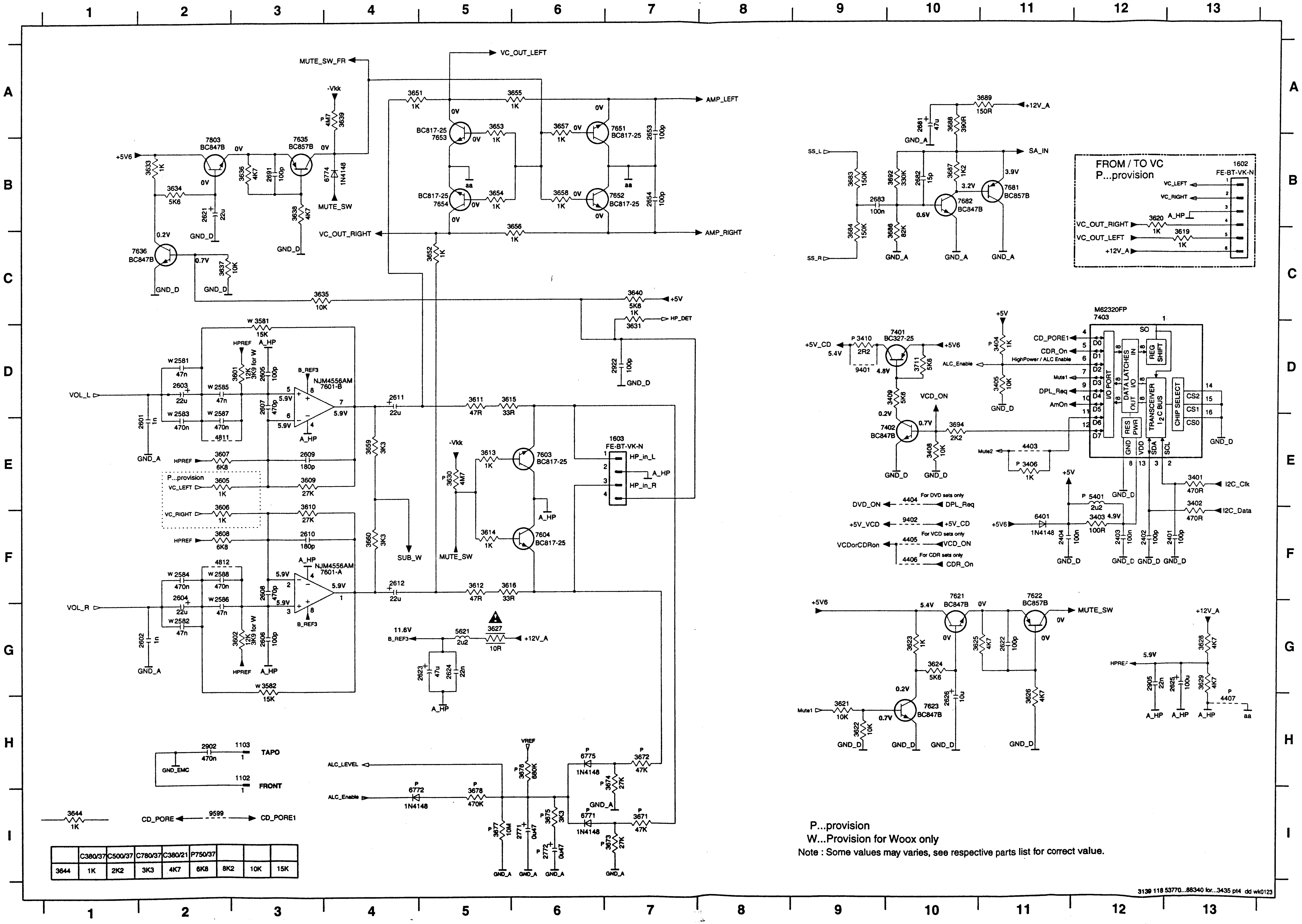
TU_Left
TU_Right
CD_Left
CD_Right
DPL_R
DPL_L
+12V_M
EH-B 1506
GND_EMC
GND_M
SS_L
Line_L
Line_R
SS_R
only for CDR 1532 FE-BT-VK-N
CDR_Rec_L
CDR_Rec_R
CDR_PB_R
CDR_PB_L
+CMOS
1501 YKC21-3418 AUX IN
1510 FE-BT-VK-N
+12V_A
MIC_DET
1504 YKC21-3418 LINE OUT
LINE_L
LINE_R
-Vkk
+5V6
Mute2
YKC21-3416 1691
SUB_W
MUTE_SW_FR
SUBWOOFER OUT
7693 BC817-25
7661 BC847B
7662 BC847B
7663 BC857B
7201 BC847B
6201 1N4148
6202 BZX55-C9V1
7501 TDA7468
POWER SUPPLY
SOURCE SELECTOR
SUR.
VOLUME I LEFT
TREBLE LEFT
BASS LEFT
VOLUME II LEFT
BASS ALC
LOGIC
IIC BUS REC
VOLUME I RIGHT
TREBLE RIGHT
BASS RIGHT
VOLUME II RIGHT
ALC_LEVEL
I2C_Clk
I2C_Data
6641 1N4148
6642 1N4148
VOL_L
VOL_R
SIMPLE I.S.
FULL I.S.
7585 BC847B
7586 BC847B
7485 BC847B
7488 BC847B
GND_A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I

D...for DPL
S...for simple I.S.
P...provision
Note : Some values may varies, see respective parts list for correct value.

3139 118 53770...88340 for...3435 pt4 dd wk0123

1501 E1
1502 E3
1503 F1
1504 H1
1505 E4
1506 A1
1510 F1
1531 C1
1532 C2
1691 H5
2201 B7
2202 C7
2203 D7
2204 C6
2205 C5
2206 C7
2501 E2
2502 E2
2503 D3
2504 E3
2505 F5
2506 F7
2507 E7
2511 A4
2512 B4
2513 A4
2514 B4
2515 F6
2516 F7
2521 A4
2522 A4
2523 F6
2524 F6
2531 D4
2532 C4
2533 F6
2534 F7
2535 B3
2536 C3
2541 A8
2542 H8
2543 C9
2544 G9
2546 F9
2547 B10
2548 G10
2549 C11
2550 F11
2551 C11
2552 F11
2553 B12
2554 G11
2555 B12
2556 H11
2557 B13
2558 G12
2559 C12
2560 G12
2561 C14
2562 G14
2563 C14
2564 G14
2565 C9
2567 B9
2568 G9
2589 A10
2590 I9
2591 A10
2592 I10
2593 A11
2594 I11
2641 D13
2642 E13
2661 G2
2662 I2
2663 H2
2664 I2
2665 H2
2666 H2
2667 G1
2669 E1
2696 G7
2697 H7
2698 G5
2707 E11
2708 E12
2904 G1
2908 E12
2921 G5
2923 B1
2924 F5
3201 B6
3202 C6
3435 D3
3436 D3
3437 D3
3438 D3
3501 D1
3502 E1
3503 D2
3504 E2
3505 E2
3506 E2
3507 E3
3508 E3
3511 A3
3512 B3
3513 A3
3514 B3
3521 A3
3522 A3
3523 A3
3524 A3
3525 E6
3526 E7
3531 C2
3532 C3
3533 B3
3534 C3
3541 A7
3542 I7
3543 A9
3544 I9
3545 B9
3546 G9
3547 C9
3548 F9
3549 B9
3550 G9
3551 C11
3552 F11
3553 C11
3554 F11
3555 C12
3556 F12
3557 C12
3558 G12
3559 C14
3560 F14
3561 B14
3562 F14
3563 A12
3564 G11
3565 B12
3566 G11
3567 B12
3568 H11
3569 B13
3570 H11
3571 B13
3572 G13
3591 A10
3592 I10
3593 A10
3594 I10
3641 D14
3642 E14
3643 D12
3645 D11
3646 E11
3661 G3
3662 I3
3663 G3
3664 H3
3665 G1
3666 H1
3667 G3
3668 I3
3669 I3
3690 H7
3699 G6
3700 H6
3707 E12
3708 E12
3712 I3
4501 F5
4641 D14
4642 E14
4813 G5
4920 E1
5403 A1
5404 B1
6201 C6
6202 C6
6641 D13
6642 E13
7201 B6
7485 C14
7488 G14
7501 C8
7585 B13
7586 G11
7661 G2
7662 H2
7663 H3
7693 H6
9618 A1
9654 B1

AF9 BOARD - CIRCUIT DIAGRAM (PART 2)


MUTE_SW_FR
VC_OUT_LEFT
AMP_LEFT
AMP_RIGHT
VC_OUT_RIGHT
MUTE_SW
-Vkk
+5V6
7803 BC847B
7635 BC857B
7636 BC847B
7653 BC817-25
7654 BC817-25
7651 BC817-25
7652 BC817-25
GND_D
GND_A
SS_L
SS_R
SA_IN
+12V_A
7681 BC857B
7682 BC847B
FROM / TO VC
P...provision
1602 FE-BT-VK-N
VC_LEFT
VC_RIGHT
A_HP
+12V_A
HP_DET
+5V
VOL_L
VOL_R
NJM4556AM 7601-B
NJM4556AM 7601-A
B_REF3
HPREF
P...provision
1603 FE-BT-VK-N
HP_in_L
HP_in_R
7603 BC817-25
7604 BC817-25
SUB_W
11.6V
+5V_CD
7401 BC327-25
7402 BC847B
VCD_ON
ALC_Enable
M62320FP 7403
CD_PORE1
CDR_On
HighPower / ALC Enable
Mute1
DPL_Req
AmOn
I/O PORT
DATA LATCHES
REG SHIFT
TRANSCEIVER I2C BUS
CHIP SELECT
RES PWR
GND VDD SDA SCL
CS2 CS1 CS0
I2C_Clk
I2C_Data
Mute2
DVD_ON
+5V_VCD
VCDorCDRon
For DVD sets only
For VCD sets only
For CDR sets only
7621 BC847B
7622 BC857B
7623 BC847B
2902 470n
1103 TAPO
1102 FRONT
GND_EMC
ALC_LEVEL
VREF
6772 1N4148
6775 1N4148
6771 1N4148
3644 1K
CD_PORE
9599
CD_PORE1
3139 118 53770...88340 for...3435 pt4 dd wk0123

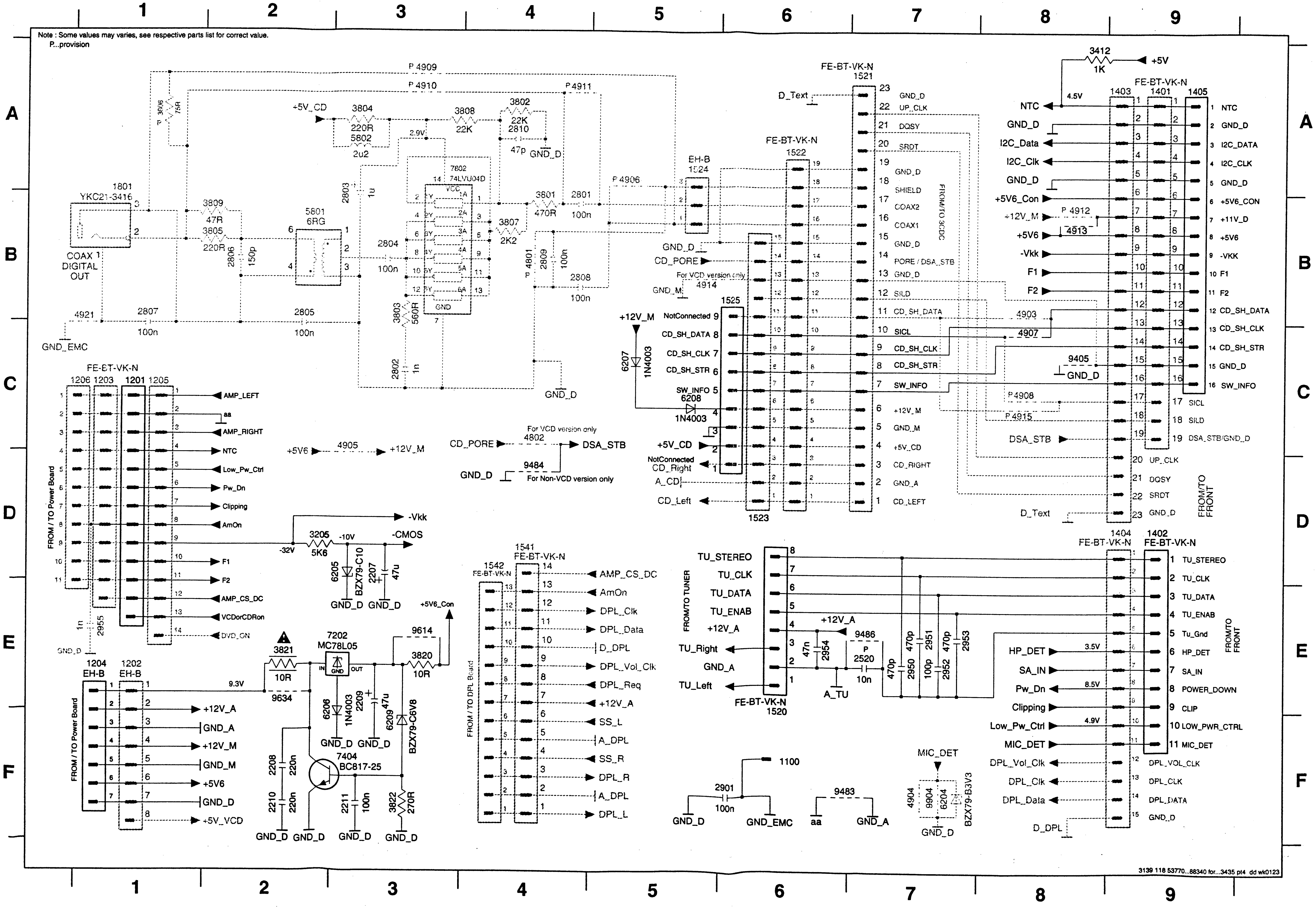
P...provision
W...Provision for Woox only
Note : Some values may varies, see respective parts list for correct value.

	C380/37	C500/37	C780/37	C380/21	P750/37			
3644	1K	2K2	3K3	4K7	6K8	8K2	10K	15K

1102	H3
1103	H3
1602	B13
1603	E7
2401	F13
2402	F12
2403	F12
2404	F11
2581	D2
2582	G2
2583	D2
2584	F2
2585	D2
2586	F2
2587	D2
2588	F2
2601	E2
2602	G2
2603	D2
2604	F2
2605	D3
2606	G3
2607	D3
2608	F3
2609	E3
2610	F3
2611	D4
2612	F4
2621	B2
2622	G11
2623	G5
2624	G5
2625	G13
2626	H10
2653	A7
2654	B7
2681	A10
2682	B10
2683	B9
2691	B3
2771	I6
2772	I6
2902	H2
2905	G12
2922	D7
3401	E13
3402	E13
3403	F12
3404	D11
3405	D11
3406	E11
3408	E10
3409	D10
3410	D9
3581	D3
3582	G3
3601	D3
3602	G3
3605	E2
3606	F2
3607	E2
3608	F2
3609	E3
3610	F3
3611	D5
3612	F5
3613	E5
3614	F5
3615	D5
3616	F5
3619	C13
3620	B12
3621	H9
3622	H9
3623	G10
3624	G10
3625	G10
3626	H11
3627	G5
3628	G13
3629	G13
3630	E5
3631	D7
3633	B2
3634	B2
3635	C3
3636	B3
3637	C2
3638	B3
3639	A4
3640	C7
3644	I1
3651	A4
3652	C5
3653	A5
3654	B5
3655	A6
3656	C6
3657	A6
3658	B6
3659	E4
3660	F4
3671	I7
3672	H7
3673	I7
3674	H7
3675	I6
3676	H6
3677	I5
3678	I5
3683	B9
3684	C9
3686	C10
3687	B10
3688	A10
3689	A11
3692	B10
3694	E10
3711	D10
4403	E11
4404	E10
4405	F10
4406	F10
4407	H13
4811	E2
4812	F2
5401	E12
5621	G5
6401	F11
6771	I6
6772	I4
6774	B4
6775	H6
7401	D10
7402	E10
7403	C12
7601-A	G3
7601-B	D3
7603	E6
7604	F6
7621	F10
7622	F11
7623	H10
7635	B3
7636	C2
7651	A7
7652	B7
7653	B5
7654	B5
7681	B11
7682	B10
7803	B2
9401	D9
9402	F10
9599	I2

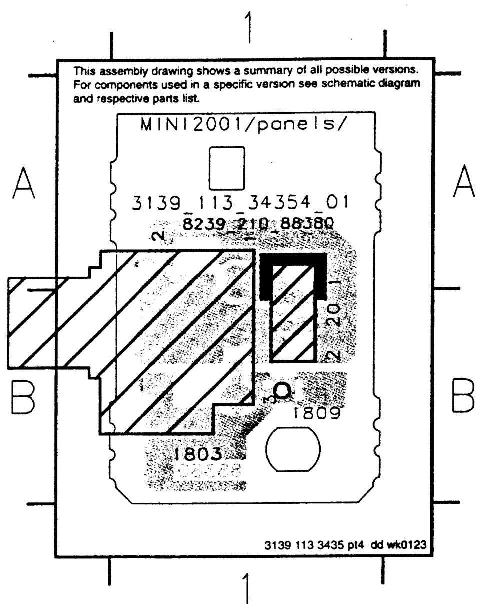
AF9 BOARD - CIRCUIT DIAGRAM (PART 3)

1100	F6
1201	C1
1202	E1
1203	C1
1204	E1
1205	C1
1206	C1
1401	A9
1402	D9
1403	A9
1404	D9
1405	A9
1520	E6
1521	A7
1522	A6
1523	D6
1524	A5
1525	B5
1541	D4
1542	D4
1801	A1
2207	D3
2208	F2
2209	E3
2210	F2
2211	F3
2520	E7
2801	B4
2802	C3
2803	B3
2804	B3
2805	B2
2806	B2
2807	B1
2808	B4
2809	B4
2810	A4
2901	F6
2950	E7
2951	E7
2952	E7
2953	E7
2954	E6
2955	E1
3205	D2
3412	A8
3801	B4
3802	A4
3803	B3
3804	A3
3805	B2
3806	A1
3807	B4
3808	A3
3809	B2
3820	E3
3821	E2
3822	F3
4801	B4
4802	C4
4903	B8
4904	F7
4905	C3
4906	A5
4907	C8
4908	C8
4909	A3
4910	A3
4911	A4
4912	B8
4913	B8
4914	B5
4915	C8
4921	B1
5801	B2
5802	A3
6204	F7
6205	D3
6206	F3
6207	C5
6208	C5
6209	F3
7202	E3
7404	F3
7802	A3
9405	C8
9483	F6
9484	D4
9486	E7
9614	E3
9634	E2
9904	F7


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Note : Some values may varies, see respective parts list for correct value.
P...provision
P 4909
P 4910
P 4911
3806 75R
1801
YKC21-3416
COAX DIGITAL OUT
3809 47R
3805 220R
2806 150p
5801 6RG
+5V_CD
3804 220R
5802 2u2
2.9V
2803 1u
7802 74LVU04D
VCC
GND
3808 22K
3802 22K
2810 47p
GND_D
3801 470R
2801 100n
3807 2K2
2804 100n
3803 560R
P 4801
2809 100n
2808 100n
2802 1n
4921
2807 100n
2805 100n
GND_EMC
P 4906
EH-B 1524
FE-BT-VK-N 1522
FE-BT-VK-N 1521
D_Text
GND_D
UP_CLK
DQSY
SRDT
SHIELD
COAX2
COAX1
PORE / DSA_STB
SILD
CD_SH_DATA
SICL
CD_SH_CLK
CD_SH_STR
SW_INFO
+12V_M
GND_M
+5V_CD
CD_RIGHT
GND_A
CD_LEFT
FROM/TO 3CDC
GND_D
CD_PORE
For VCD version only
4914
GND_M
1525
NotConnected
CD_SH_DATA
CD_SH_CLK
CD_SH_STR
SW_INFO
6207 1N4003
6208 1N4003
+5V_CD
NotConnected CD_Right
A_CD
CD_Left
1523
3412 1K
+5V
4.5V
FE-BT-VK-N
1403
1401
1405
NTC
GND_D
I2C_Data
I2C_Clk
+5V6_Con
+12V_M
P 4912
4913
+5V6
-Vkk
F1
F2
4903
4907
9405
P 4908
P 4915
DSA_STB
D_Text
NTC
GND_D
I2C_DATA
I2C_CLK
+5V6_CON
+11V_D
+5V6
-VKK
F1
F2
CD_SH_DATA
CD_SH_CLK
CD_SH_STR
GND_D
SW_INFO
SICL
SILD
DSA_STB/GND_D
UP_CLK
DQSY
SRDT
GND_D
FROM/TO FRONT
FE-BT-VK-N
1206
1203
1201
1205
FROM / TO Power Board
AMP_LEFT
aa
AMP_RIGHT
NTC
Low_Pw_Ctrl
Pw_Dn
Clipping
AmOn
F1
F2
AMP_CS_DC
VCDorCDRon
DVD_ON
1n 2955
GND_D
+5V6
4905
+12V_M
CD_PORE
For VCD version only
4802
DSA_STB
9484
For Non-VCD version only
GND_D
-Vkk
3205 5K6
-10V
-CMOS
-32V
6205 BZX79-C10
2207 47u
GND_D
1204 EH-B
1202 EH-B
9.3V
3821 10R
9634
7202 MC78L05
IN
OUT
GND
+5V6_Con
9614
3820 10R
6206 1N4003
2209 47u
6209 BZX79-C6V8
7404 BC817-25
2208 220n
2210 220n
2211 100n
3822 270R
+12V_A
GND_A
+12V_M
GND_M
+5V6
GND_D
+5V_VCD
1542 FE-BT-VK-N
1541 FE-BT-VK-N
FROM / TO DPL Board
AMP_CS_DC
AmOn
DPL_Clk
DPL_Data
D_DPL
DPL_Vol_Clk
DPL_Req
+12V_A
SS_L
A_DPL
SS_R
DPL_R
A_DPL
DPL_L
FROM/TO TUNER
TU_STEREO
TU_CLK
TU_DATA
TU_ENAB
+12V_A
TU_Right
GND_A
TU_Left
FE-BT-VK-N 1520
+12V_A
2954 47n
9486
P 2520 10n
A_TU
2950 470p
2951 470p
2952 100p
2953 470p
1404 FE-BT-VK-N
1402 FE-BT-VK-N
HP_DET
SA_IN
Pw_Dn
Clipping
Low_Pw_Ctrl
MIC_DET
DPL_Vol_Clk
DPL_Clk
DPL_Data
D_DPL
3.5V
8.5V
4.9V
TU_STEREO
TU_CLK
TU_DATA
TU_ENAB
Tu_Gnd
HP_DET
SA_IN
POWER_DOWN
CLIP
LOW_PWR_CTRL
MIC_DET
DPL_VOL_CLK
DPL_CLK
DPL_DATA
GND_D
FROM/TO FRONT
1100
2901 100n
GND_D
GND_EMC
9483
aa
GND_A
MIC_DET
4904
9904
6204 BZX79-B3V3
GND_D
3139 118 53770...88340 for...3435 pt4 dd wk0123

VIDEO OUT CINCH BOARD - COMPONENT LAYOUT

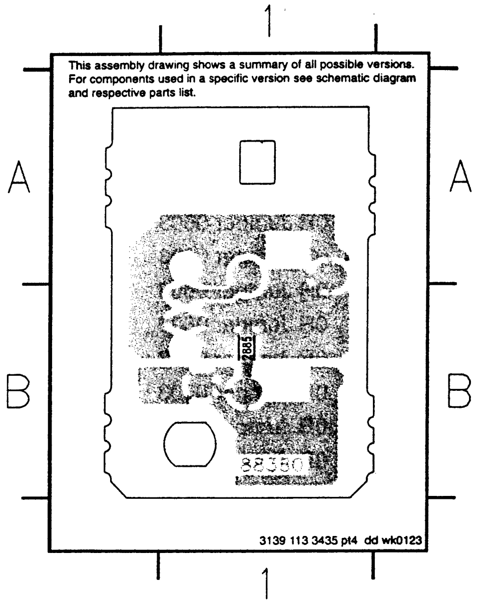
20 B1 1809 B1
1803 B1



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

VIDEO OUT CINCH BOARD - CHIP LAYOUT

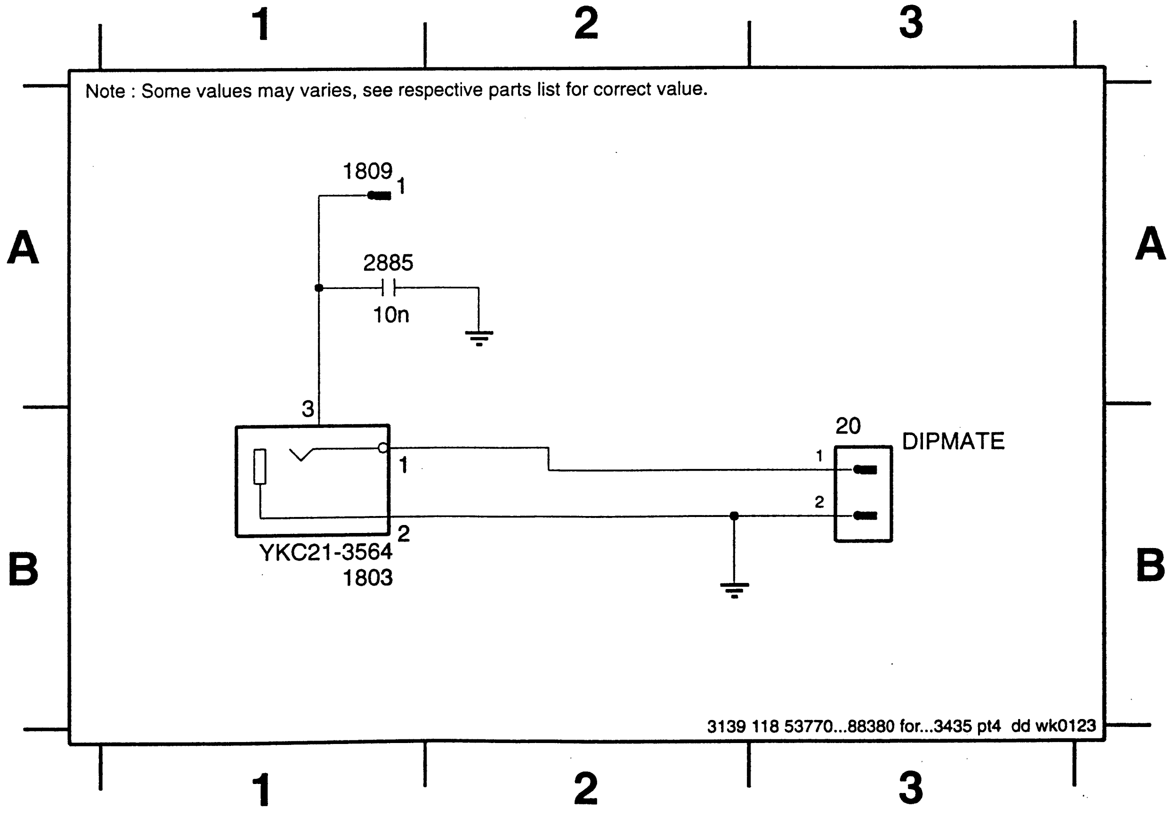
2885 B1



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

VIDEO OUT CINCH PART - CIRCUIT DIAGRAM

20 B3 1803 B1 1809 A1 2885 A1



Note : Some values may varies, see respective parts list for correct value.

ELECTRICAL PARTS LIST - AF9 BOARD

MISCELLANEOUS

1201	4822 267 10738	Flex Connector 13P
1402	4822 267 11039	Flex Connector 11P
1405	2422 025 14526	Flex Connector 16P
1501	4822 265 20553	Cinch Socket - Aux in
1504	4822 265 20553	Cinch Socket - Line out
1510	4822 267 10954	Flex Connector 5P
1520	4822 265 11515	Flex Connector 8P
1525	2422 025 14518	Flex Connector 9P
1532	4822 267 10953	Flex Connector 7P
1603	4822 267 10733	Flex Connector 4P
1691	4822 267 31729	Cinch Socket - Subwoofer out

CAPACITORS

2201	4822 124 40207	100µF 20% 25V
2202	4822 124 81151	22µF 50V
2203	4822 124 40433	47µF 20% 25V
2204	4822 124 40196	220µF 20% 16V
2205	4822 126 14238	2,2nF 50V
2206	4822 126 14494	22nF 10% 25V
2208	4822 126 13879	220nF +80/-20% 16V
2209	4822 124 41751	47µF 20% 50V
2210	4822 126 13879	220nF +80/-20% 16V
2401	4822 122 31765	100pF 2% 63V
2402	4822 122 31765	100pF 2% 63V
2403	4822 126 14305	100nF 10% 16V
2404	4822 126 14305	100nF 10% 16V
2501	4822 122 31765	100pF 2% 63V
2502	4822 122 31765	100pF 2% 63V
2503	4822 124 21913	1µF 20% 63V
2504	4822 124 21913	1µF 20% 63V
2505	4822 122 31765	100pF 2% 63V
2506	4822 122 31765	100pF 2% 63V
2507	4822 126 14305	100nF 10% 16V
2515	4822 122 31765	100pF 2% 63V
2516	4822 122 31765	100pF 2% 63V
2520	4822 121 51387	10nF 20% 16V
2521	4822 126 14305	100nF 10% 16V
2522	4822 126 14305	100nF 10% 16V
2523	4822 122 31765	100pF 2% 63V
2524	4822 122 31765	100pF 2% 63V
2531	4822 124 40769	4,7µF 20% 100V
2532	4822 124 40769	4,7µF 20% 100V
2533	4822 122 31765	100pF 2% 63V
2534	4822 122 31765	100pF 2% 63V
2535	4822 124 40769	4,7µF 20% 100V
2536	4822 124 40769	4,7µF 20% 100V
2541	4822 124 41407	0,47µF 20% 63V
2542	4822 124 41407	0,47µF 20% 63V
2543	5322 126 11583	10nF 10% 50V
2544	5322 126 11583	10nF 10% 50V
2546	4822 121 43856	4,7nF 5% 250V
2547	5322 126 11579	3,3nF 10% 63V
2548	5322 126 11579	3,3nF 10% 63V
2565	4822 121 43856	4,7nF 5% 250V
2567	3198 016 31020	1nF 25V
2568	3198 016 31020	1nF 25V
2589	4822 121 42408	220nF 5% 63V
2590	4822 121 42408	220nF 5% 63V
2591	5322 121 42661	330nF 5% 63V
2592	5322 121 42661	330nF 5% 63V
2593	4822 121 51252	470nF 5% 63V
2594	4822 121 51252	470nF 5% 63V
2601	3198 016 31020	1nF 25V
2602	3198 016 31020	1nF 25V
2603	4822 124 81151	22µF 50V
2604	4822 124 81151	22µF 50V
2605	4822 122 31765	100pF 2% 63V
2606	4822 122 31765	100pF 2% 63V
2607	4822 126 13881	470pF 5% 50V
2608	4822 126 13881	470pF 5% 50V
2609	4822 126 14508	180pF 5% 50V
2610	4822 126 14508	180pF 5% 50V
2611	4822 124 81151	22µF 50V
2612	4822 124 81151	22µF 50V
2621	4822 124 81151	22µF 50V
2622	4822 122 31765	100pF 2% 63V
2623	4822 124 40433	47µF 20% 25V
2624	3198 017 42230	22nF 50V
2625	4822 124 40207	100µF 20% 25V
2626	4822 124 40769	4,7µF 20% 100V
2653	4822 122 31765	100pF 2% 63V
2654	4822 122 31765	100pF 2% 63V
2661	4822 124 21913	1µF 20% 63V
2662	4822 124 21913	1µF 20% 63V
2663	3198 016 31020	1nF 25V
2664	3198 016 31020	1nF 25V
2665	4822 126 13881	470pF 5% 50V
2666	4822 126 13881	470pF 5% 50V
2667	4822 126 14305	100nF 10% 16V
2669	4822 126 14305	100nF 10% 16V
2691	4822 122 31765	100pF 2% 63V
2696	4822 124 81151	22µF 50V
2697	4822 126 13881	470pF 5% 50V
2698	4822 126 14305	100nF 10% 16V
2707	4822 122 31765	100pF 2% 63V
2708	4822 122 31765	100pF 2% 63V
2771	4822 124 41407	0,47µF 20% 63V
2904	4822 126 14305	100nF 10% 16V
2905	3198 017 42230	22nF 50V
2908	4822 126 14305	100nF 10% 16V
2924	3198 016 31020	1nF 25V
2950	4822 126 13881	470pF 5% 50V
2951	4822 126 13881	470pF 5% 50V
2952	4822 122 31765	100pF 2% 63V

ELECTRICAL PARTS LIST - AF9 BOARD

CAPACITORS

2953	4822 126 13881	470pF 5% 50V

RESISTORS

3201	4822 117 12968	820R 5% 0,62W
3202	4822 051 30151	150R 5% 0,062W
3401	4822 051 30471	470R 5% 0,062W
3402	4822 051 30471	470R 5% 0,062W
3403	4822 116 52175	100R 5% 0,5W
3405	4822 051 30103	10k 5% 0,062W
3408	4822 051 30103	10k 5% 0,062W
3409	4822 051 30562	5k6 5% 0,063W
3435	4822 050 11002	1k 1% 0,4W
3436	4822 050 11002	1k 1% 0,4W
3437	4822 116 52207	1k2 5% 0,5W
3438	4822 116 52207	1k2 5% 0,5W
3501	4822 051 30472	4k7 5% 0,062W
3502	4822 051 30472	4k7 5% 0,062W
3503	4822 051 30472	4k7 5% 0,062W
3504	4822 051 30472	4k7 5% 0,062W
3505	4822 051 30153	15k 5% 0,062W
3506	4822 051 30153	15k 5% 0,062W
3521	4822 051 30102	1k 5% 0,062W
3522	4822 051 30102	1k 5% 0,062W
3525	4822 051 30471	470R 5% 0,062W
3526	4822 051 30471	470R 5% 0,062W
3533	4822 051 30102	1k 5% 0,062W
3534	4822 051 30102	1k 5% 0,062W
3543	4822 117 12925	47k 1% 0,063W
3544	4822 117 12925	47k 1% 0,063W
3545	4822 051 30562	5k6 5% 0,063W
3546	4822 051 30562	5k6 5% 0,063W
3547	4822 051 30103	10k 5% 0,062W
3548	4822 051 30103	10k 5% 0,062W
3549	4822 051 30183	18k 5% 0,062W
3550	4822 051 30183	18k 5% 0,062W
3591	4822 117 12902	8k2 1% 0,063W
3592	4822 117 12902	8k2 1% 0,063W
3593	4822 051 30562	5k6 5% 0,063W
3594	4822 051 30562	5k6 5% 0,063W
3601	4822 116 52238	12k 5% 0,5W
3602	4822 116 52238	12k 5% 0,5W
3607	4822 051 30682	6k8 5% 0,062W
3608	4822 116 83961	6k8 5%
3609	4822 051 30273	27k 5% 0,062W
3610	4822 051 30273	27k 5% 0,062W
3611	4822 051 30479	47R 5% 0,062W
3612	4822 051 30479	47R 5% 0,062W
3613	4822 051 30102	1k 5% 0,062W
3614	4822 051 30102	1k 5% 0,062W
3615	4822 051 30339	33R 5% 0,062W
3616	4822 051 30339	33R 5% 0,062W
3621	4822 051 30103	10k 5% 0,062W
3622	4822 051 30103	10k 5% 0,062W
3623	4822 051 30102	1k 5% 0,062W
3624	4822 051 30562	5k6 5% 0,063W
3625	4822 051 30472	4k7 5% 0,062W
3626	4822 051 30472	4k7 5% 0,062W
3627	4822 052 10109	⚠ 10R 5% 0,33W
3628	4822 116 52283	4k7 5% 0,5W
3629	4822 051 30472	4k7 5% 0,062W
3631	4822 050 11002	1k 1% 0,4W
3633	4822 051 30102	1k 5% 0,062W
3634	4822 051 30562	5k6 5% 0,063W
3635	4822 051 30103	10k 5% 0,062W
3636	4822 051 30472	4k7 5% 0,062W
3637	4822 051 30103	10k 5% 0,062W
3638	4822 051 30472	4k7 5% 0,062W
3640	4822 116 52289	5k6 5% 0,5W
3644	4822 051 30332	3k3 5% 0,062W
3645	4822 051 30221	220R 5% 0,062W
3646	4822 051 30221	220R 5% 0,062W
3651	4822 051 30102	1k 5% 0,062W
3652	4822 051 30102	1k 5% 0,062W
3653	4822 051 30102	1k 5% 0,062W
3654	4822 051 30102	1k 5% 0,062W
3655	4822 051 30102	1k 5% 0,062W
3656	4822 051 30102	1k 5% 0,062W
3657	4822 051 30102	1k 5% 0,062W
3658	4822 051 30102	1k 5% 0,062W
3659	4822 051 30332	3k3 5% 0,062W
3660	4822 051 30332	3k3 5% 0,062W
3661	4822 051 30272	2k7 5% 0,062W
3662	4822 051 30272	2k7 5% 0,062W
3663	4822 116 52256	2k2 5% 0,5W
3664	4822 051 30222	2k2 5% 0,062W
3665	4822 051 30471	470R 5% 0,062W
3666	4822 051 30471	470R 5% 0,062W
3668	4822 051 30472	4k7 5% 0,062W
3669	4822 051 30103	10k 5% 0,062W
3690	4822 051 30102	1k 5% 0,062W
3694	4822 051 30222	2k2 5% 0,062W
3699	4822 051 30471	470R 5% 0,062W
3700	4822 051 30332	3k3 5% 0,062W
3707	4822 051 30102	1k 5% 0,062W
3708	4822 051 30102	1k 5% 0,062W
3711	4822 051 30562	5k6 5% 0,063W
3820	4822 116 52176	10R 5% 0,5W
3821	4822 052 10109	⚠ 10R 5% 0,33W
4100	4822 051 30008	0R Jumper 0603
4101	4822 051 30008	0R Jumper 0603
4104	4822 051 30008	0R Jumper 0603
4108	4822 051 30008	0R Jumper 0603
4110	4822 051 30008	0R Jumper 0603
4111	4822 051 30008	0R Jumper 0603

4112	4822 051 30008	0R Jumper 0603
4113	4822 051 30008	0R Jumper 0603
4114	4822 051 30008	0R Jumper 0603
4115	4822 051 30008	0R Jumper 0603
4116	4822 051 30008	0R Jumper 0603
4118	4822 051 30008	0R Jumper 0603
4119	4822 051 30008	0R Jumper 0603
4122	4822 051 30008	0R Jumper 0603
4124	4822 051 30008	0R Jumper 0603
4125	4822 051 30008	0R Jumper 0603
4126	4822 051 30008	0R Jumper 0603
4127	4822 051 30008	0R Jumper 0603
4128	4822 051 30008	0R Jumper 0603
4130	4822 051 30008	0R Jumper 0603
4132	4822 051 30008	0R Jumper 0603
4133	4822 051 30008	0R Jumper 0603
4134	4822 051 30008	0R Jumper 0603
4135	4822 051 30008	0R Jumper 0603
4137	4822 051 30008	0R Jumper 0603
4138	4822 051 30008	0R Jumper 0603
4139	4822 051 30008	0R Jumper 0603
4141	4822 051 30008	0R Jumper 0603
4142	4822 051 30008	0R Jumper 0603
4143	4822 051 30008	0R Jumper 0603
4144	4822 051 30008	0R Jumper 0603
4145	4822 051 30008	0R Jumper 0603
4146	4822 051 30008	0R Jumper 0603
4147	4822 051 30008	0R Jumper 0603
4148	4822 051 30008	0R Jumper 0603
4151	4822 051 30008	0R Jumper 0603
4152	4822 051 30008	0R Jumper 0603
4153	4822 051 30008	0R Jumper 0603
4403	4822 051 30008	0R Jumper 0603
4406	4822 051 30008	0R Jumper 0603
4641	4822 051 30008	0R Jumper 0603
4642	4822 051 30008	0R Jumper 0603
4811	4822 051 30008	0R Jumper 0603
4812	4822 051 30008	0R Jumper 0603
4907	4822 051 30008	0R Jumper 0603
4908	4822 051 30008	0R Jumper 0603
4913	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5621	4822 157 62552	Coil 2,2µH 5%

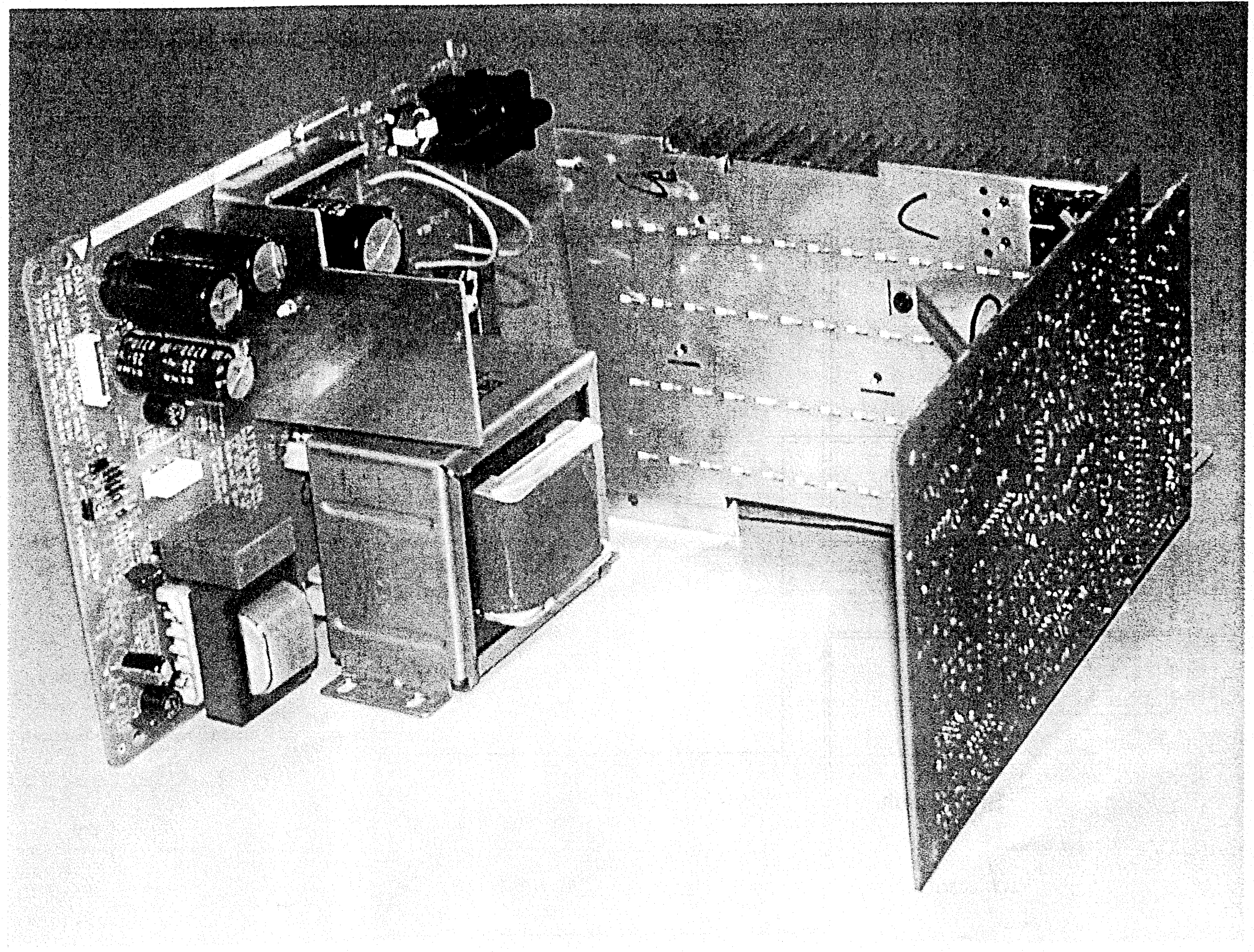
DIODES

6201	4822 130 30621	1N4148
6202	4822 130 30862	BZX55-C9V1
6206	4822 130 31878	1N4003G
6207	4822 130 31878	1N4003G
6208	4822 130 31878	1N4003G
6401	4822 130 30621	1N4148
6774	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7201	4822 130 60511	BC847B
7202	4822 209 72042	MC78L05ACP
7401	4822 130 41246	BC327-25
7402	4822 130 60511	BC847B
7403	4822 209 17345	M62320FP
7501	9322 150 74668	TDA7468D
7601	4822 209 31378	NJM4556AM
7603	4822 130 42804	BC817-25
7604	4822 130 42804	BC817-25
7621	4822 130 60511	BC847B
7622	4822 130 60373	BC857B
7623	4822 130 60511	BC847B
7635	4822 130 60373	BC857B
7636	4822 130 60511	BC847B
7651	4822 130 42804	BC817-25
7652	4822 130 42804	BC817-25
7653	4822 130 42804	BC817-25
7654	4822 130 42804	BC817-25
7661	4822 130 60511	BC847B
7662	4822 130 60511	BC847B
7663	4822 130 60373	BC857B
7693	4822 130 42804	BC817-25
7803	4822 130 60511	BC847B

Note : Only the parts mentioned in this list are normal service spare parts.



POWER 2001 Module

(30 - 70W Version)

stage .9

TABLE OF CONTENTS

Brief Circuit Description 9-1
Block Diagram 9-3
Component Layout ***Mains part*** 9-4
Circuit Diagram ***Mains part*** 9-5
Component Layout ***Power part*** 9-6
Circuit Diagram ***Power part*** 9-7
Partslist 9-8

Circuit details:

Amplifier:

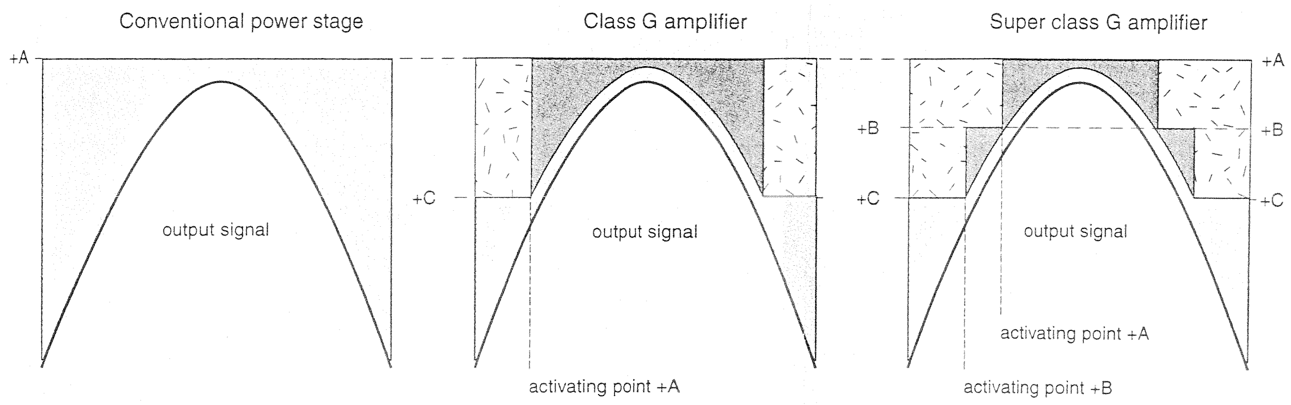
Attention: In the POWER 2001 module the power amplifier IC AN7591 is used as a bridge-amplifier.
Any connection from output to ground will destroy the outpout stages!

- Via the AMP_ON control line, connected to pins 6 (Stby), the power amplifiers are switched on/off by the µP.
  High level (approx. 4,5V): power amplifiers switched on
  Low level (approx. 0V): power amplifiers switched off

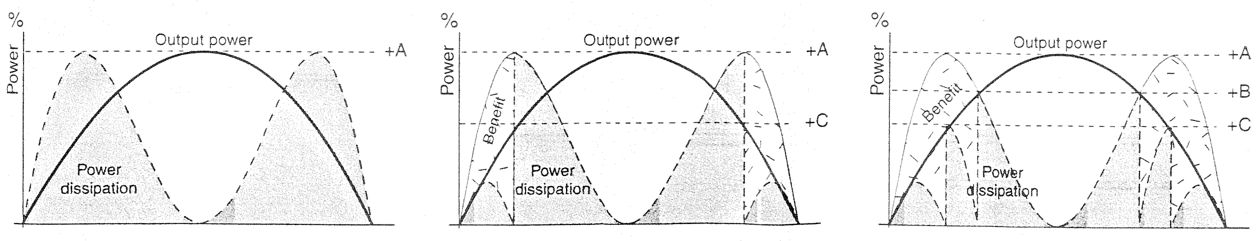
- Super class G - operation

  The power amplifiers operate as so-called super class G - amplifiers:
  The supply pins 12 (Vcc) are not just connected to one fixed DC-supply as in conventional amplifiers.
  Dependent on the output power there are three different DC-voltages supplied to the power amplifiers:
  ⇒ +C1 (+20V) for low output power
  ⇒ +B1 (+29V) for medium output power
  ⇒ +A1 (+41V for high output power

Principle / benefit of Super Class G



☐ Voltage drop on power stage IC
▨ Voltage drop on switching transistor(s)
⬚ Benefit - voltage drop on switching transistor(s) reduces total power dissipation



Circuit details continued:

- **Low power standby feature**

An additional small standby transformer, reduces power consumption in standby-mode.
In case power is switched on, the control line ECO is low → relay 1210 is activated → contacts 1 and 2 are closed → transformer 5001is connected to mains.
When the set is switched off (standby) the control line ECO is high → relay 1210 is not activated → mainstransformer is disconnected. Via standby transformer and rectifiers 6210-6214 the supply voltage LOW_PWR_SUP is substituted. This voltage is always available and so the microprocessor is kept running.

- **DC voltages +A1, +B1, +C1**

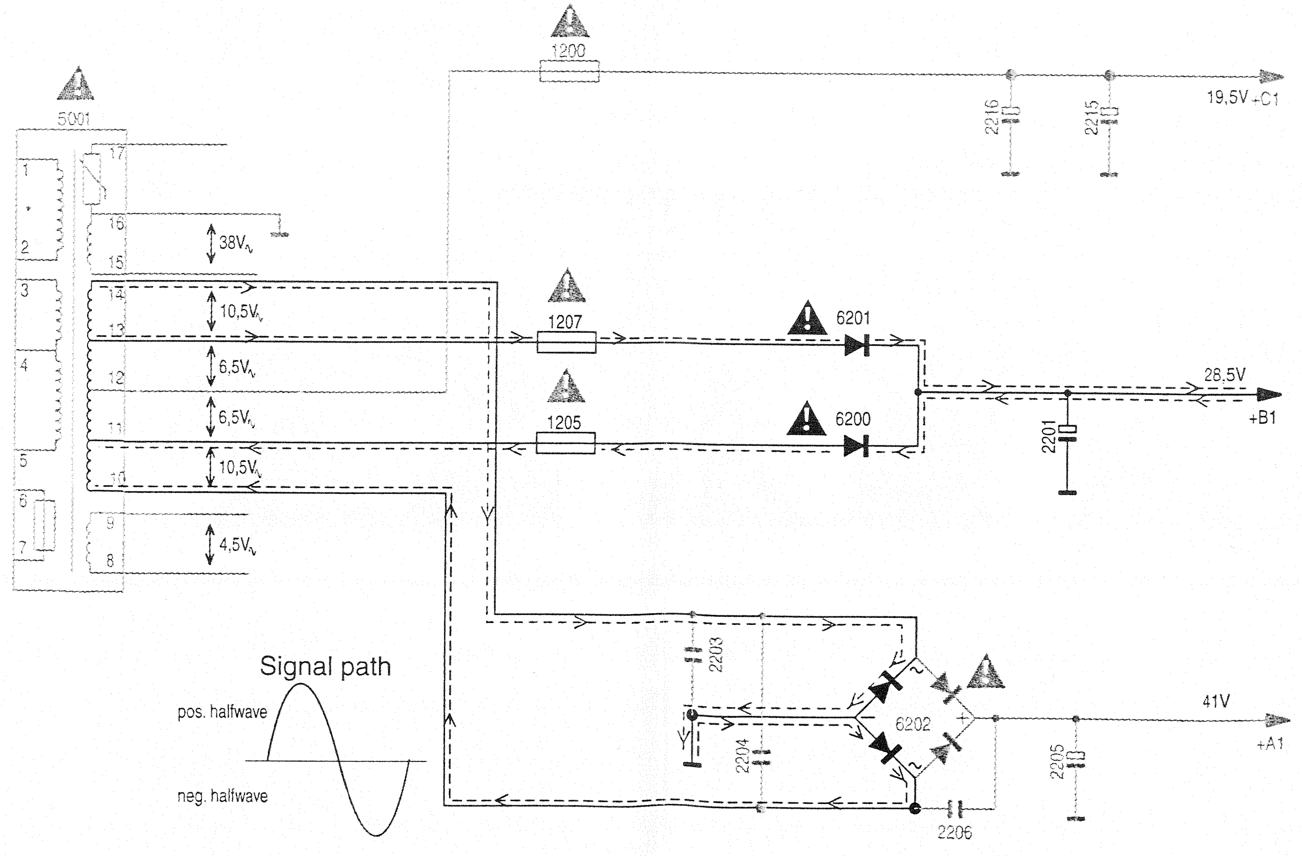
These voltages supply the Super Class G amplifier, described on previous page.
The whole power supply is optimized for the special characteristic of this type of amplifier. For that reason several "tricky" details have been applied to ensure optimal efficiency and symmetrical load to the mains transformer.

Generation of +A1

Common full wave rectifying with bridge rectifier 6202, using 100% secondary winding of mains transformer (pin 10-14).

Generation of +B1

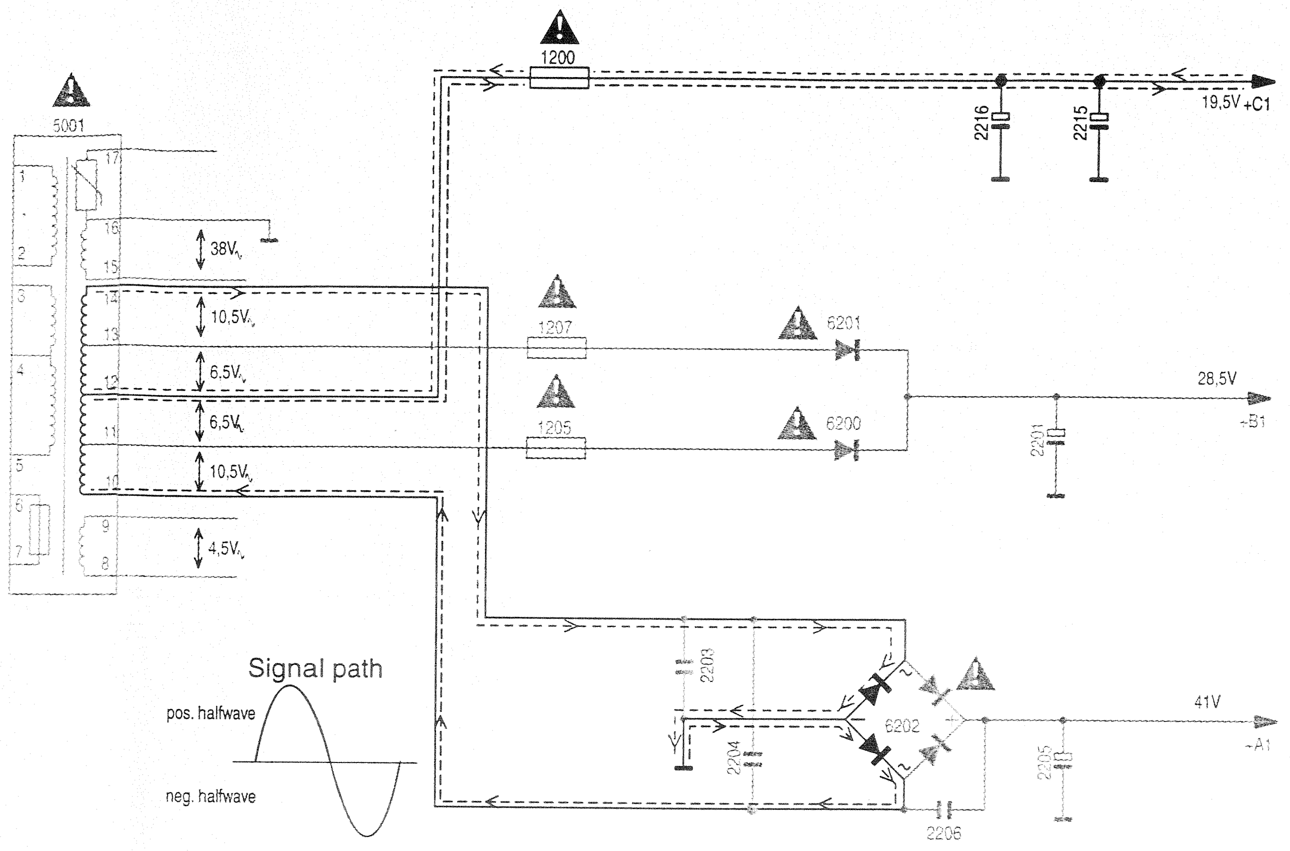
The supply for +B1 consists of one full wave rectifier:
– 2 diodes of bridge rectifier 6202, with 6200(6220 in parallel) 6201(6221 in parallel) for generation of +B1using approx. 70% secondary winding of mains transformer (pin 10-13 respectively pin 11-14).
As example for generation of +B1 see picture 1.


5001
1200
2216
2215
19,5V +C1
38V~
10,5V~
6,5V~
6,5V~
10,5V~
4,5V~
1207
1205
6201
6200
2201
28,5V
+B1
2203
2204
6202
2205
2206
41V
+A1
Signal path
pos. halfwave
neg. halfwave

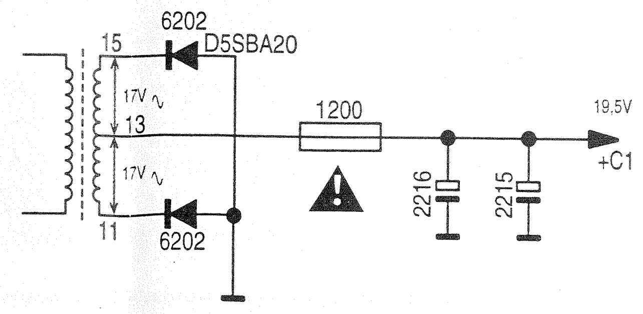
picture 1

Generation of +C1

Full wave rectifying with 2 diodes of bridge rectifier 6202, using 50% secondary winding of mains transformer (pin 13-15/13-11).
See picture 2 below.

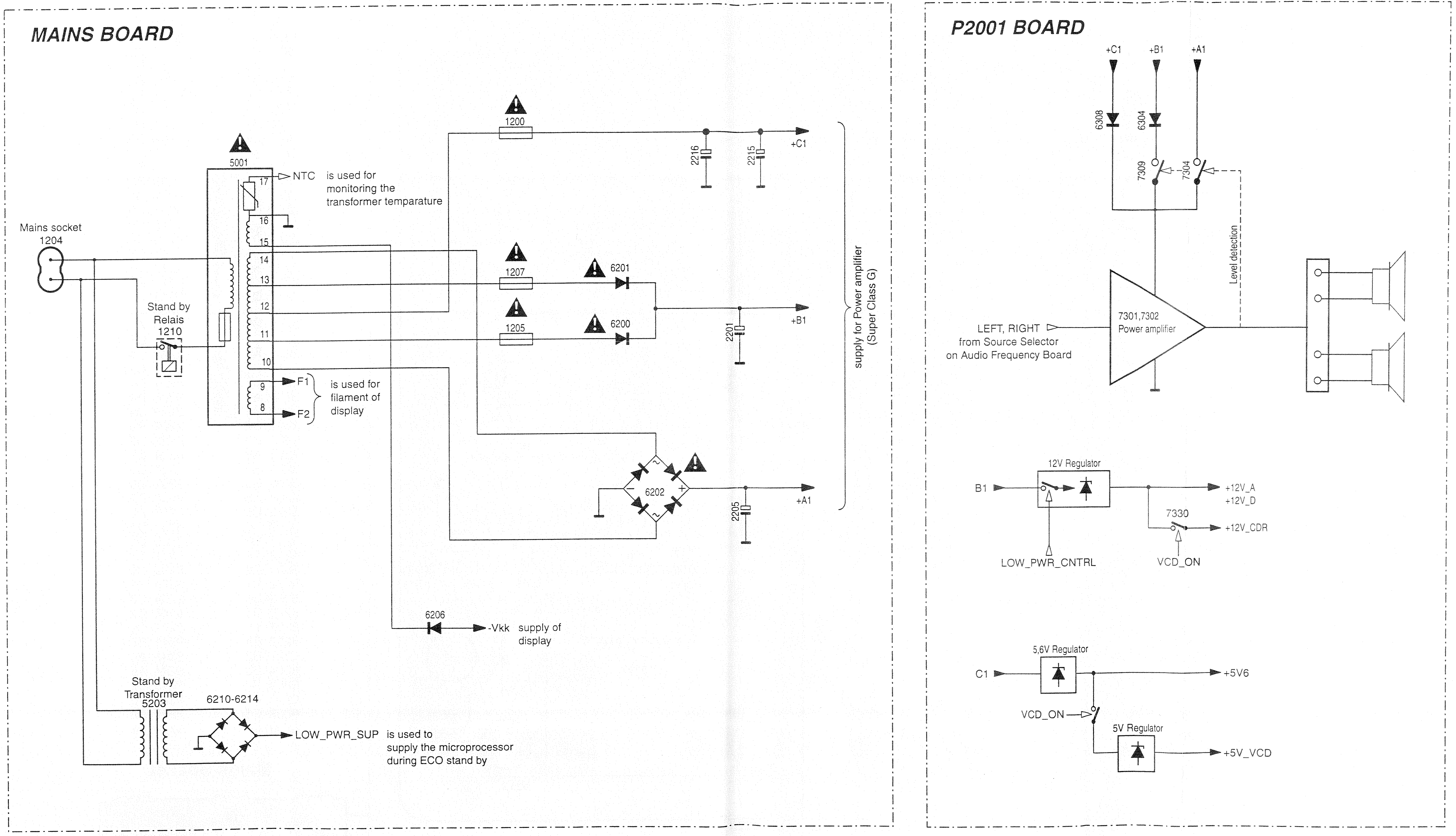

1200
5001
2216
2215
19,5V +C1
38V~
10,5V~
6,5V~
6,5V~
10,5V~
4,5V~
1207
1205
6201
6200
28,5V
+B1
2201
2203
2204
6202
2205
2206
41V
+A1
Signal path
pos. halfwave
neg. halfwave

simplified:


6202
D5SBA20
15
17V~
13
17V~
11
6202
1200
2216
2215
19,5V
+C1

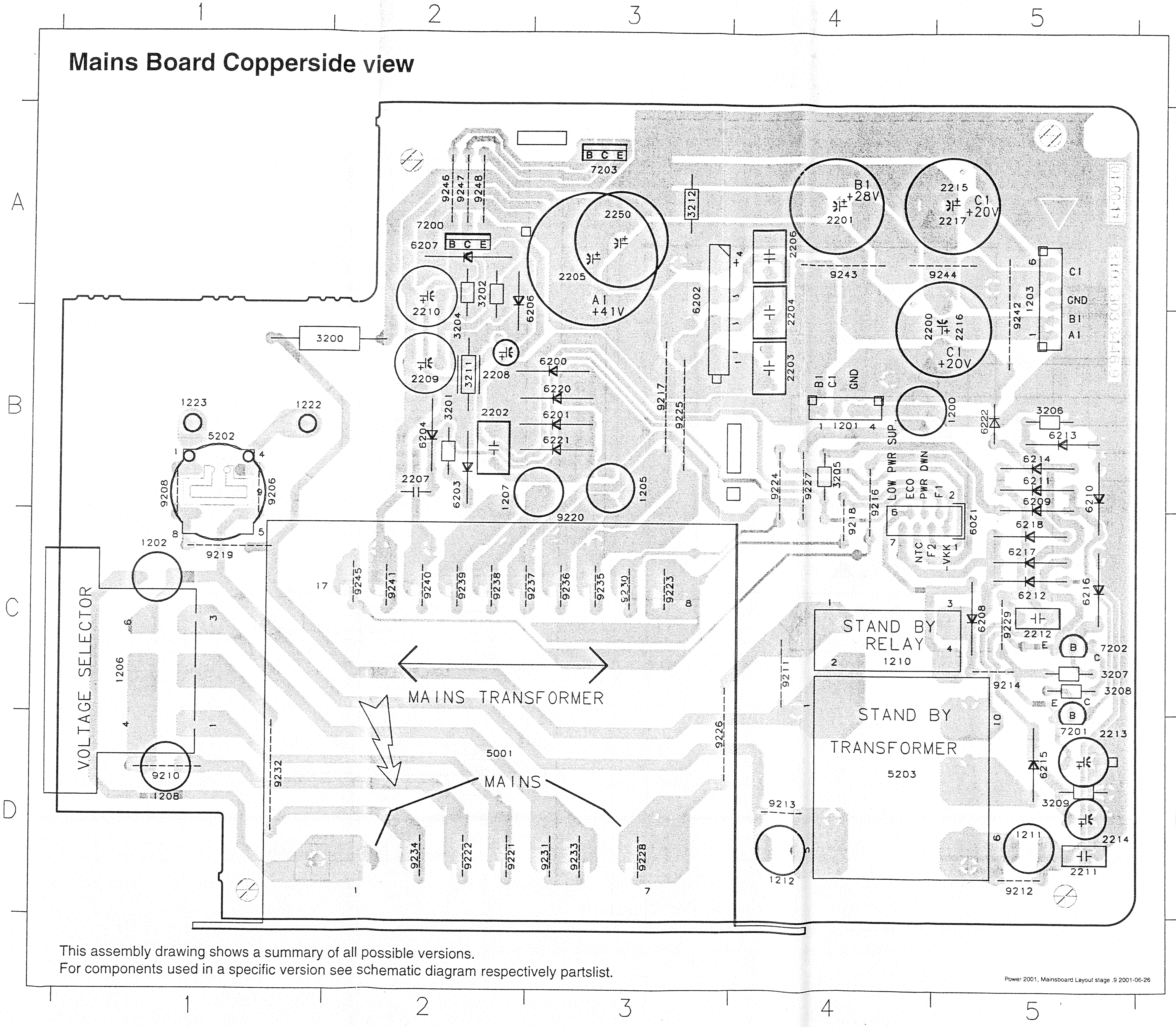
picture 2

Block Diagram


MAINS BOARD
Mains socket
1204
Stand by
Relais
1210
5001
17
16
15
14
13
12
11
10
9
8
NTC
is used for
monitoring the
transformer temparature
F1
F2
is used for
filament of
display
1200
1207
1205
6201
6200
6202
2216
2215
2201
2205
+C1
+B1
+A1
supply for Power amplifier
(Super Class G)
6206
-Vkk
supply of
display
Stand by
Transformer
5203
6210-6214
LOW_PWR_SUP
is used to
supply the microprocessor
during ECO stand by
P2001 BOARD
+C1
+B1
+A1
6308
6304
7309
7304
Level detection
7301,7302
Power amplifier
LEFT, RIGHT
from Source Selector
on Audio Frequency Board
12V Regulator
B1
+12V_A
+12V_D
7330
+12V_CDR
LOW_PWR_CNTRL
VCD_ON
5,6V Regulator
C1
+5V6
VCD_ON
5V Regulator
+5V_VCD

Blockdiagram Power2001 30-70W, 26 09 2000

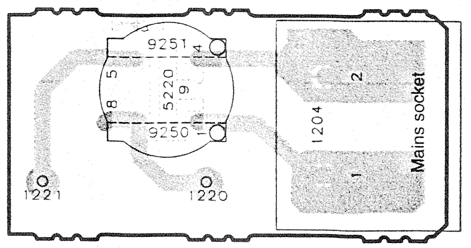
Mains Board Copperside view


1
2
3
4
5
A
B
C
D
7203
B C E
7200
6207
9246
9247
9248
3212
2250
2205
A1
+41V
B1
+28V
2201
2215
C1
+20V
2217
2200
2216
C1
+20V
9243
9244
9242
1203
C1
GND
B1
A1
2210
2209
3204
3202
6206
3211
2208
6200
6220
6201
6221
2202
3201
6204
6203
2207
1207
1205
9220
3200
6202
9217
9225
2206
2204
2203
B1
C1
GND
1201
1200
SUP
LOW PWR
ECO
PWR DWN
F1
NTC
F2
-VKK
1209
3205
9224
9227
9216
9218
6222
3206
6213
6214
6211
6209
6210
6218
6217
6212
6216
6208
9229
2212
7202
1223
1222
5202
9208
9206
1202
9219
VOLTAGE SELECTOR
1206
9210
1208
9245
9241
9240
9239
9238
9237
9236
9235
9230
9223
MAINS TRANSFORMER
5001
MAINS
9232
9226
9234
9222
9221
9231
9233
9228
STAND BY
RELAY
1210
9211
9214
STAND BY
TRANSFORMER
5203
3207
3208
7201
2213
6215
3209
2214
2211
9213
1212
1211
9212
Power 2001, Mainsboard Layout stage .9 2001-06-26

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

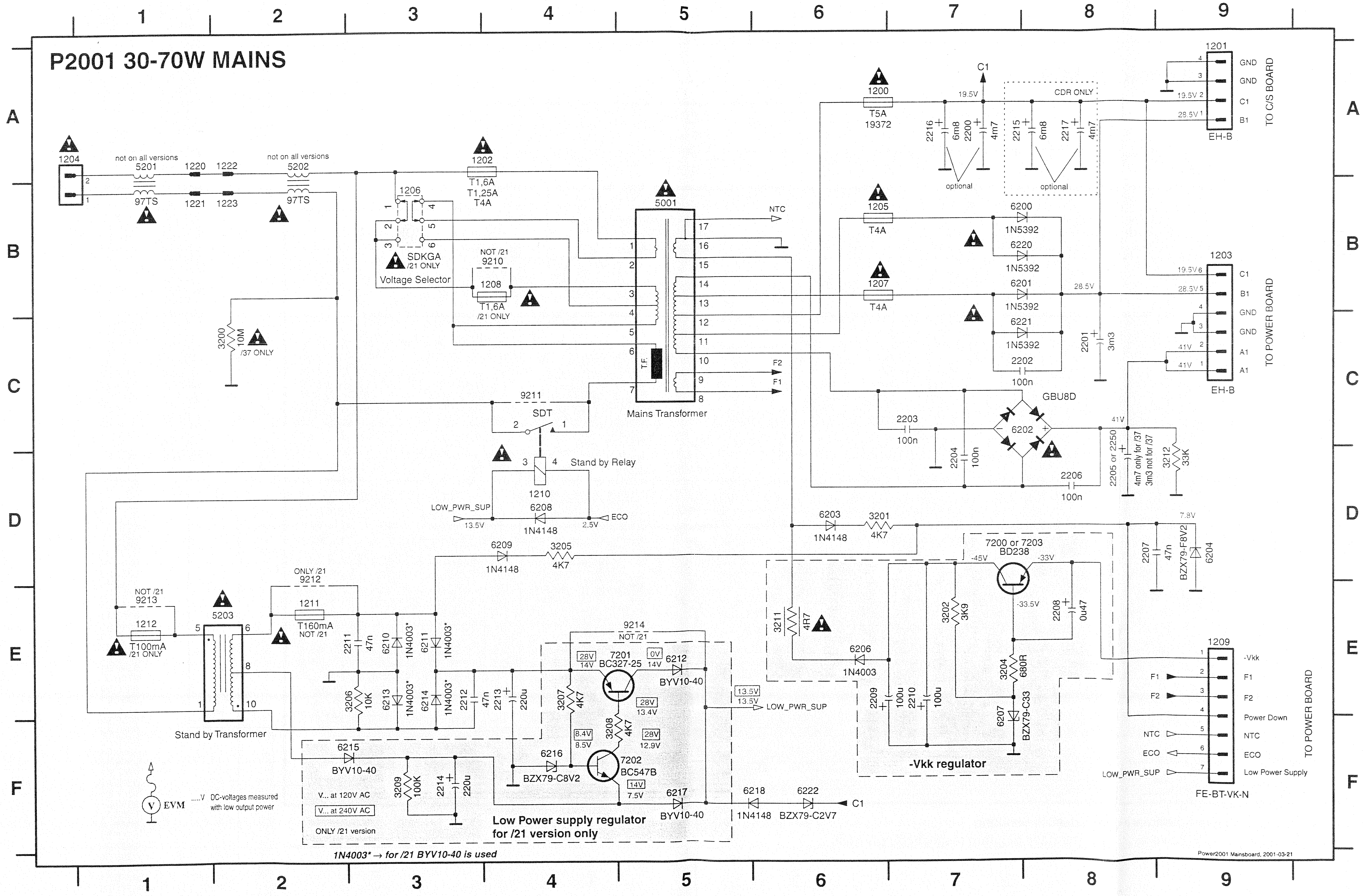
1200	B5	6210	C5
1201	B4	6211	B5
1202	C1	6212	C5
1203	A5	6213	B5
1205	B3	6214	B5
1206	C1	6215	D5
1207	C3	6216	C5
1208	D1	6217	C5
1209	C5	6218	C5
1210	C5	6220	B3
1211	D5	6221	B3
1212	D4	6222	B5
1222	B2	7200	A2
1223	B1	7201	D5
2200	B5	7202	C5
2201	A4	7203	A3
2202	B3	9206	B2
2203	B4	9208	B1
2204	B4	9210	D1
2205	B3	9211	D4
2206	A4	9212	D5
2207	B2	9213	D4
2208	B3	9214	C5
2209	B2	9216	B4
2210	B2	9217	B3
2211	D5	9218	C4
2212	C5	9219	C1
2213	D5	9220	C3
2214	D5	9221	D3
2215	A5	9222	D3
2216	B5	9223	C4
2217	A5	9224	B4
2250	A3	9225	B4
3200	B2	9226	D4
3201	B2	9227	B4
3202	B3	9228	D3
3204	A3	9229	C5
3205	B4	9230	C3
3206	B5	9231	D3
3207	C5	9232	D2
3208	C5	9233	D3
3209	D5	9234	D2
3211	B3	9235	C3
3212	A4	9236	C3
5001	C2	9237	C3
5202	B1	9238	C3
5203	D5	9239	C3
6200	B3	9240	C2
6201	B3	9241	C2
6202	B4	9242	B5
6203	B2	9243	A4
6204	B2	9244	A5
6206	B3	9245	C2
6207	A2	9246	A2
6208	C5	9247	A2
6209	C5	9248	A3

Mains Socket


9251
5220
9250
1204
Mains socket
1221
1220

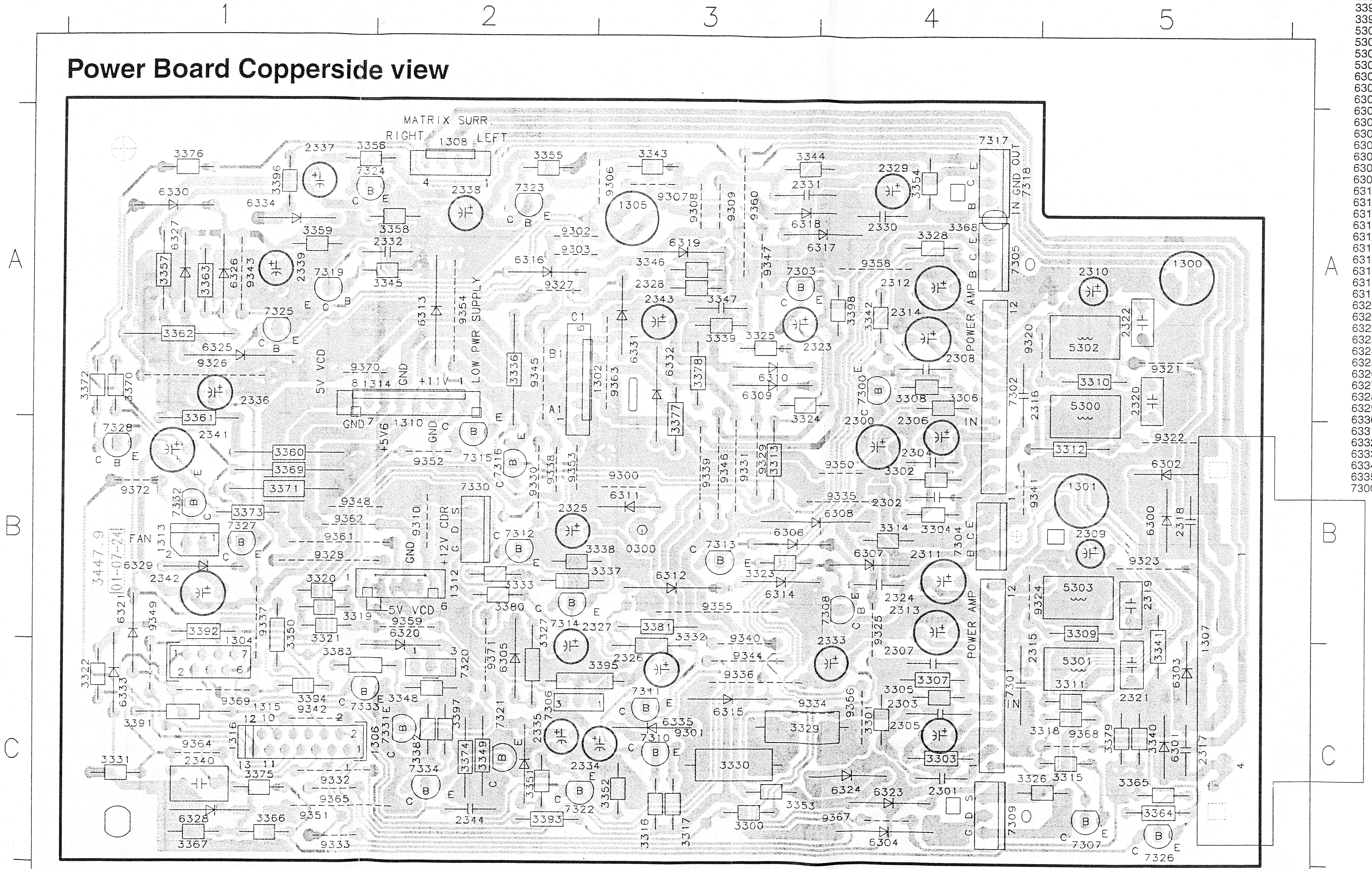
1200	A6
1201	A9
1202	A4
1203	B9
1205	B6
1206	B3
1207	B6
1208	B4
1209	E9
1210	D4
1211	E2
1212	E1
1222	A2
1223	B2
2200	A7
2201	C8
2202	C8
2203	C7
2204	D7
2205	D8
2206	D8
2207	D8
2208	E8
2209	E6
2210	E7
2211	E3
2212	E3
2213	E4
2214	F3
2215	A7
2216	A7
2217	A8
2250	D8
3200	C2
3201	D6
3202	E7
3204	E7
3205	E4
3206	E3
3207	E4
3208	F4
3209	F3
3211	E6
3212	D9
5001	C5
5202	A2
5203	E1
6200	B8
6201	B8
6202	C8
6203	D6
6204	D9
6206	E6
6207	F7
6208	D4
6209	E4
6210	E3
6211	E3
6212	E5
6213	E3
6214	E3
6215	F3
6216	F4
6217	F5
6218	F6
6220	B8
6221	C8
7200	D7
7201	E4
7202	F5
7203	D7
9206	A2
9208	B2
9210	B4
9211	C4
9212	D2
9213	E1
9214	E5
9215	F6

P2001 30-70W MAINS


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
1204
not on all versions
5201
97TS
1220
1221
1222
1223
5202
97TS
1202
T1,6A
T1,25A
T4A
1206
SDKGA
/21 ONLY
Voltage Selector
NOT /21
9210
1208
T1,6A
/21 ONLY
3200
10M
/37 ONLY
5001
Mains Transformer
T.F.
NTC
F2
F1
9211
SDT
Stand by Relay
1210
LOW_PWR_SUP
13.5V
6208
1N4148
2,5V
ECO
1200
T5A
19372
C1
19.5V
2216
6m8
2200
4m7
CDR ONLY
2215
6m8
2217
4m7
optional
1201
GND
GND
C1
B1
EH-B
TO C/S BOARD
1205
T4A
6200
1N5392
6220
1N5392
1207
T4A
6201
1N5392
6221
1N5392
2202
100n
28.5V
2201
3m3
1203
C1
B1
GND
GND
A1
A1
41V
TO POWER BOARD
GBU8D
6202
2203
100n
2204
100n
2206
100n
2205 or 2250
4m7 only for /37
3m3 not for /37
3212
33K
6203
1N4148
3201
4K7
7.8V
2207
47n
BZX79-F8V2
6204
6209
1N4148
3205
4K7
7200 or 7203
BD238
-45V
-33V
-33.5V
3202
3K9
2208
0u47
3204
680R
6207
BZX79-C33
3211
4R7
6206
1N4003
2209
100u
2210
100u
-Vkk regulator
1209
-Vkk
F1
F2
Power Down
NTC
ECO
Low Power Supply
FE-BT-VK-N
NOT /21
9213
1212
T100mA
/21 ONLY
5203
Stand by Transformer
ONLY /21
9212
1211
T160mA
NOT /21
2211
47n
6210
1N4003*
6211
1N4003*
3206
10K
6213
1N4003*
6214
1N4003*
2212
47n
2213
220u
9214
NOT /21
7201
BC327-25
28V
14V
0V
6212
BYV10-40
3207
4K7
3208
4K7
28V
13.4V
12.9V
8.4V
8.5V
6216
BZX79-C8V2
7202
BC547B
14V
7.5V
6217
BYV10-40
13.5V
6215
BYV10-40
3209
100K
2214
220u
V... at 120V AC
V... at 240V AC
ONLY /21 version
Low Power supply regulator
for /21 version only
6218
1N4148
6222
BZX79-C2V7
EVM
.....V DC-voltages measured with low output power
1N4003* → for /21 BYV10-40 is used
Power2001 Mainsboard, 2001-03-21

0300	B3
1300	A5
1301	B5
1302	A3
1304	C1
1305	A3
1306	C2
1307	B5
1308	A2
1310	A2
1312	B2
1313	B1
1314	A2
1315	C1
1316	C1
2300	B4
2301	C4
2302	B4
2303	C4
2304	B4
2305	C4
2306	A4
2307	C4
2308	A4
2309	B5
2310	A5
2311	B4
2312	A4
2313	B4
2314	A4
2315	C4
2316	A4
2317	C5
2318	B5
2319	B5
2320	A5
2321	C5
2322	A5
2323	A3
2324	B4
2325	B2
2326	C3
2327	B3
2328	A3
2329	A4
2330	A4
2331	A3
2332	A2
2333	B4
2334	C3
2335	C2
2336	A1
2337	A1
2338	A2
2339	A1
2340	C1
2341	B1
2342	B1
2343	A3
2344	C2
3300	C3
3301	C4
3302	B4
3303	C4
3304	B4
3305	C4
3306	A4
3307	C4
3308	A4
3309	B5
3310	A5
3311	C5
3312	B5
3313	B3
3314	B4
3315	C5
3316	C3
3317	C3
3318	C5
3319	B1
3320	B1
3321	B1
3322	C1
3323	B3
3324	A3
3325	A3
3326	C5
3327	B2
3328	A4
3329	C3
3330	C3
3331	C1
3332	B3
3333	B2
3336	A2
3337	B3
3338	B3
3339	A3
3340	C5
3341	B5
3342	A4
3343	A3
3344	A3
3345	A2
3346	A3
3347	A3
3348	C2
3349	C2
3350	B1
3351	C2
3352	C3
3353	C3
3354	A4
3355	A2
3356	A1
3357	A1
3358	A2
3359	A1
3360	B1
3361	A1
3362	A1
3363	A1
3364	C5
3365	C5
3366	C1
3367	C1
3368	A4
3369	B1
3370	A1
3371	B1
3372	A1
3373	B1
3374	C2
3375	C1
3376	A1
3377	B3
3378	A3
3379	C5
3380	B2
3381	B3
3382	C2
3383	C1
3391	C1
3392	B1
3393	C2
3394	C1
3395	C2
3396	A1
3397	C2
3398	A4
5300	A5
5301	B5
5302	A5
5303	B5
6300	B5
6301	C5
6302	B5
6303	C5
6304	C4
6305	C2
6306	B3
6307	B4
6308	B3
6309	A3
6310	A4
6311	B3
6312	B3
6313	A2
6314	B3
6315	C3
6316	A2
6317	A4
6318	A3
6319	A3
6320	B2
6321	B1
6322	C2
6323	C4
6324	C4
6325	A1
6326	A1
6327	A1
6328	C1
6329	B1
6330	A1
6331	A3
6332	A3
6333	C1
6334	A1
6335	C3
7300	A4
7301	C4
7302	A4
7303	A3
7304	B4
7305	A4
7306	C2
7307	C5
7308	B4
7309	C4
7310	C3
7311	C3
7312	B2
7313	B3
7314	B3
7315	B2
7316	B2
7317	A4
7318	A4
7319	A1
7320	C2
7321	C2
7322	C2
7323	A2
7324	A1
7325	A1
7326	C5
7327	B1
7328	B1
7330	B2
7331	C2
7332	B1
7333	C1
7334	C2
9300	B3
9301	C3
9302	A2
9303	A2
9306	A3
9307	A3
9308	A3
9309	A3
9310	B2
9320	A4
9321	A5
9322	B5
9323	B5
9324	B4
9325	B4
9326	A1
9327	A2
9328	B1
9329	B3
9330	B2
9331	B3
9332	C1
9333	C1
9334	C3
9335	B4
9336	C3
9337	B1
9338	B2
9339	B3
9340	B3
9341	B4
9342	C1
9343	A1
9344	C3
9345	A2
9346	B3
9347	A3
9348	B1
9349	C1
9350	B4
9351	C1
9352	B2
9353	B2
9354	A2
9355	B3
9356	C4
9358	A4
9359	B2
9360	A3
9361	B1
9362	B1
9363	A3
9364	C1
9365	C1
9367	C4
9368	C5
9369	C1
9370	A1
9371	C2
9372	B1

Power Board Copperside view



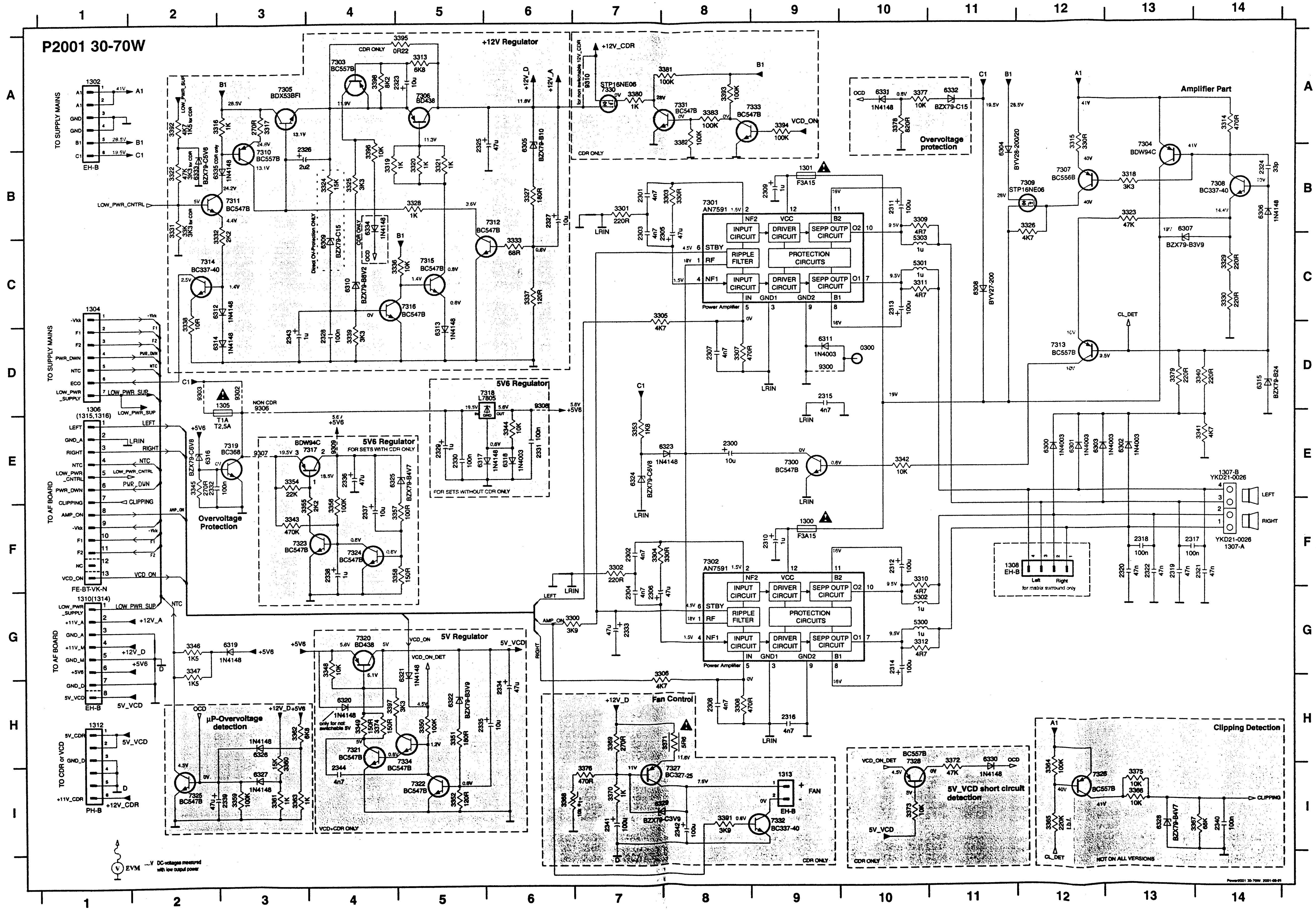
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

Power 2001. Powerboard Layout stage .9 2001-08-21

1 2 3 4 5

0300	D10
1300	F9
1301	B9
1302	A1
1304	C1
1305	D3
1306	E1
1307-a	F14
1307-b	E14
1308	F12
1310	G1
1312	H1
1313	I9
1314	G1
1315	D1
1316	D1
2300	E8
2301	B7
2302	F7
2303	B7
2304	G7
2305	B8
2306	G7
2307	D8
2308	H8
2309	B9
2310	F9
2311	B10
2312	F10
2313	C10
2314	G10
2315	D9
2316	H9
2317	F13
2318	F13
2319	F13
2320	F13
2321	F14
2322	F13
2323	A4
2324	B14
2325	A5
2326	B3
2327	B6
2328	D4
2329	E5
2330	E5
2331	E6
2332	F5
2333	G7
2334	H6
2335	H5
2336	E4
2337	F4
2338	F4
2339	I2
2340	I14
2341	I7
2342	I8
2343	D3
3300	G6
3301	B7
3302	F7
3303	B8
3304	F7
3305	C7
3306	H7
3307	D8
3308	H8
3309	B10
3310	F10
3311	C10
3312	G10
3313	A5
3314	A14
3315	A12
3316	A3
3317	A3
3318	B13
3319	B4
3320	B5
3321	B5
3322	B2
3323	B13
3324	B4
3325	B4
3326	B12
3327	B6
3328	B3
3329	C14
3330	C14
3331	B2
3332	B3
3333	C6
3336	C5
3337	C6
3338	C2
3339	D4
3340	D14
3341	E14
3342	E10
3343	F3
3344	E6
3345	F5
3346	G2
3347	G2
3348	G4
3349	H4
3350	H5
3351	H5
3352	I5
3353	E7
3354	E3
3355	F3
3356	F4
3357	F5
3358	F5
3359	I3
3360	H3
3361	I3
3362	H3
3363	I3
3364	I12
3365	I12
3366	I13
3367	I14
3368	I6
3369	H7
3370	I7
3371	H8
3372	I11
3373	I10
3374	H4
3375	I13
3376	I7
3377	A10
3378	A10
3379	D13
3380	A7
3381	A8
3382	A8
3383	A8
3391	I8
5300	G10
5301	C10
5302	G10
5303	C10
6300	E12
6301	E12
6302	E13
6303	E12
6304	B11
6305	A6
6306	B14
6307	B13
6308	C11
6309	C4
6310	C4
6311	D9
6312	C2
6313	D5
6314	D2
6315	D14
6316	F5
6317	E6
6318	E6
6319	G3
6320	H4
6321	H5
6322	H5
6323	E8
6324	E7
6325	E5
6326	H2
6327	H3
6328	I13
6329	I7
6330	H11
6331	A10
6332	A11
7300	E9
7301	B8
7302	F8
7303	A4
7304	A13
7305	A3
7306	A5
7307	B12
7308	B14
7309	B12
7310	B3
7311	B3
7312	B6
7313	D12
7314	C2
7315	C5
7316	C5
7317	E3
7318	D6
7319	F6
7320	G4
7321	H4
7322	I5
7323	F3
7324	F4
7325	I2
7326	I12
7327	I8
7328	H10
7330	A7
7331	A8
7332	I9
9300	D9
9302	D3
9303	D2
9306	D3
9307	E3
9308	D4
9309	D4
9310	A5

P2001 30-70W


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
+12V Regulator
CDR ONLY
3395
0R22
3313
6K8
7303
BC557B
7305
BDX53BFI
7306
BD438
7310
BC557B
7311
BC547B
7312
BC547B
7314
BC337-40
7315
BC547B
7316
BC547B
LOW_PWR_CNTRL
TO SUPPLY MAINS
1302
EH-B
A1
B1
C1
GND
41V
28.5V
19.5V
1304
-Vkk
F1
F2
PWR_DWN
NTC
ECO
LOW_PWR_SUPPLY
LOW_PWR_SUP
1306
(1315,1316)
LEFT
GND_A
RIGHT
LRIN
AMP_ON
CLIPPING
VCD_ON
NC
FE-BT-VK-N
TO AF BOARD
1310(1314)
+11V_A
+11V_M
GND_D
+5V6
5V_VCD
+12V_A
+12V_D
1312
5V_CDR
+11V_CDR
+12V_CDR
TO CDR or VCD
PH-B
+12V_CDR
STP16NE06
7330
7331
BC547B
7333
BC547B
VCD_ON
CDR ONLY
for non switchable 12V_CDR
9310
+12V_D
+12V_A
BZX79-B10
Overvoltage protection
OCD
6331
1N4148
3377
10K
6332
BZX79-C15
3378
820R
1301
F3A15
7301
AN7591
INPUT CIRCUIT
DRIVER CIRCUIT
SEPP OUTP CIRCUIT
RIPPLE FILTER
PROTECTION CIRCUITS
NF2
VCC
B2
STBY
RF
NF1
IN
GND1
GND2
O1
O2
Power Amplifier
6311
1N4003
9300
0300
1300
F3A15
7302
AN7591
Amplifier Part
7304
BDW94C
7307
BC556B
7308
BC337-40
7309
STP16NE06
7313
BC557B
BYV29-200/20
BYV27-200
6307
BZX79-B3V9
CL_DET
6300
6301
6302
6303
1N4003
1307-B
YKD21-0026
LEFT
RIGHT
YKD21-0026
1307-A
1308
EH-B
Left
Right
for matrix surround only
1305
T1A
T2,5A
9303
9302
NON CDR
9306
7319
BC368
BZX79-C6V8
Overvoltage Protection
5V6 Regulator
7318
L7805
9308
+5V6
FOR SETS WITHOUT CDR ONLY
5V6 Regulator
FOR SETS WITH CDR ONLY
BDW94C
7317
7323
BC547B
7324
BC547B
9307
9309
BZX79-B4V7
7300
BC547B
6323
1N4148
6324
BZX79-C6V8
2300
10u
µP-Overvoltage detection
7325
BC547B
6326
6327
1N4148
VCD+CDR ONLY
5V Regulator
7320
BD438
VCD_ON_DET
6320
1N4148
only for not switchable 5V
7321
BC547B
7334
BC547B
7322
BC547B
BZX79-B3V9
Fan Control
7327
BC327-25
7332
BC337-40
1313
EH-B
FAN
BZX79-C3V9
5V_VCD short circuit detection
VCD_ON_DET
7328
BC557B
6330
1N4148
OCD
5V_VCD
CDR ONLY
Clipping Detection
7326
BC557B
CLIPPING
CL_DET
NOT ON ALL VERSIONS
BZX79-B4V7
EVM
V DC-voltages measured with low output power
Power2001 30-70W 2001-08-01

ELECTRICAL PARTSLIST POWER2001 MODULE

MISCELLANEOUS

1200 ▲	2422 086 10963	FUSE RAD 5A 250V IEC	
1202 ▲	4822 071 51252	FUSE 1.25A	for sets without 5203
1202 ▲	4822 071 51602	FUSE 1,6A	for sets with 5203
1202 ▲	4822 253 10126	FUSE T4A	
1204 ▲	2422 030 00328	MAINS SOCKET /37	
1204 ▲	4822 265 31015	MAINS SOCKET /21, /22	
1205 ▲	2422 086 10786	FUSE RAD 4A 250V IEC	
1206 ▲	2422 129 16478	VOLTAGE SELECTOR	
1207 ▲	2422 086 10786	FUSE RAD 4A 250V IEC	
1208 ▲	4822 071 51252	FUSE 1.25A	for sets without 5203
1208 ▲	4822 071 51602	FUSE 1,6A	for sets with 5203
1209	4822 267 10953	FLEX FOIL CONNECTOR 7P	
1210 ▲	4822 280 10382	STAND 1P **9V**	
1211 ▲	2422 086 10771	FUSE RAD 160mA 250V IEC	
1212 ▲	4822 071 51001	FUSE 100mA	
1300 ▲	4822 252 11225	FUSE F3.15A IEC 250V	
1301 ▲	4822 252 11225	FUSE F3.15A IEC 250V	
1304	4822 267 10953	FLEX FOIL CONNECTOR 7P	
1305 ▲	4822 071 51002	FUSE T1A	for sets without 5203
1305 ▲	4822 071 52502	FUSE T2,5A	for sets with 5203
1306	4822 267 10738	FFC-CONNECTOR 13P	
1307	4822 267 31176	SPEAKER TERMINAL	
5001 ▲	3103 308 30620	TRANSFORMER MAINS	only for /37
5001 ▲	3103 308 30630	TRANSFORMER MAINS	only for /22
5001 ▲	3103 308 30640	TRANSFORMER MAINS	only for /21
5203 ▲	3103 308 30600	STANDBY TRANSFORMER /21	
5203 ▲	3103 308 30610	STANDBY TRANSFORMER /22	
5203 ▲	3103 308 30800	STANDBY TRANSFORMER /37	
8010	3139 110 34600	FLEX FOIL CABLE 7Pin, 280mm	
	4822 492 11735	SPRING FIXATION TRANSISTOR	

CAPACITORS

2200	4822 124 12012	4700µF	20%	25V	
2201	4822 124 42367	3300µF	20%	35V	
2202	5322 121 42386	100nF	5%	63V	
2203	5322 121 42386	100nF	5%	63V	
2204	5322 121 42386	100nF	5%	63V	
2205	4822 124 80415	4700µF	20%	50V	only for /37
2206	5322 121 42386	100nF	5%	63V	
2207	4822 122 33449	47nF	30%	50V	
2208	5322 124 41948	0,47µF	20%	50V	
2209	2020 012 93547	100µF	20%	63V	
2211	4822 121 43526	47nF	5%	100V	
2212	4822 121 43526	47nF	5%	100V	
2213	4822 124 11769	220µF	20%	50V	
2214	4822 124 40207	100µF	20%	25V	
2217	4822 124 12012	4700µF	20%	25V	
2250	2020 012 93774	3300µF	20%	50V	not for /37
2300	4822 124 40248	10µF	20%	63V	
2301	4822 126 11714	4,7nF	20%	16V	
2302	4822 126 11714	4,7nF	20%	16V	
2303	4822 126 11714	4,7nF	20%	16V	
2304	4822 126 11714	4,7nF	20%	16V	
2305	4822 124 40433	47µF	20%	25V	
2306	4822 124 40433	47µF	20%	25V	
2307	4822 126 11714	4,7nF	20%	16V	
2308	4822 126 11714	4,7nF	20%	16V	
2309	4822 124 21913	1µF	20%	63V	
2310	4822 124 21913	1µF	20%	63V	
2311	4822 124 40207	100µF	20%	25V	
2312	4822 124 40207	100µF	20%	25V	
2313	4822 124 40207	100µF	20%	25V	
2314	4822 124 40207	100µF	20%	25V	
2315	4822 126 11714	4,7nF	20%	16V	
2316	4822 126 11714	4,7nF	20%	16V	
2317	4822 126 12882	100nF	20%	50V	
2318	4822 126 12882	100nF	20%	50V	
2319	4822 121 43526	47nF	5%	100V	
2320	4822 121 43526	47nF	5%	100V	
2321	4822 121 43526	47nF	5%	100V	
2322	4822 121 43526	47nF	5%	100V	
2323	4822 124 40248	10µF	20%	63V	
2324	4822 122 33069	33pF	5%	50V	
2325	4822 124 40433	47µF	20%	25V	
2326	4822 124 22652	2,2µF	20%	50V	
2327	4822 124 40248	10µF	20%	63V	
2328	4822 126 12882	100nF	20%	50V	
2329	4822 124 21913	1µF	20%	63V	
2330	4822 126 12882	100nF	20%	50V	
2331	4822 126 12882	100nF	20%	50V	
2332	4822 126 12882	100nF	20%	50V	
2333	4822 124 40433	47µF	20%	25V	
2334	4822 124 40433	47µF	20%	25V	
2335	4822 124 40248	10µF	20%	63V	
2336	4822 124 40433	47µF	20%	25V	
2337	4822 124 40248	10µF	20%	63V	
2338	4822 124 21913	1µF	20%	63V	
2339	4822 124 40433	47µF	20%	25V	
2341	4822 124 23052	100µF	20%	16V	
2342	4822 124 23052	100µF	20%	16V	
2343	4822 124 21913	1µF	20%	63V	

RESISTORS

3200	4822 053 21106	10MΩ	5%	0,5W	
3201	4822 116 52283	4,7kΩ	5%	0,5W	
3202	4822 116 52276	3,9kΩ	5%	0,5W	
3204	4822 116 52228	680Ω	5%	0,5W	
3205	4822 116 52283	4,7kΩ	5%	0,5W	
3206	4822 050 21003	10kΩ	2%	0,25W	
3207	4822 116 52283	4,7kΩ	5%	0,5W	
3208	4822 116 52283	4,7kΩ	5%	0,5W	
3209	4822 116 52234	100kΩ	5%	0,5W	
3211	4822 052 10478	4,7Ω	5%	NFR	
3212	4822 050 23303	33kΩ	1%	0,6W	
3300	4822 116 52276	3,9kΩ	5%	0,5W	
3301	4822 116 83872	220Ω	5%	0,5W	
3302	4822 116 83872	220Ω	5%	0,5W	
3303	4822 116 52219	330Ω	5%	0,5W	
3304	4822 116 52219	330Ω	5%	0,5W	
3305	4822 116 52283	4,7kΩ	5%	0,5W	
3306	4822 116 52283	4,7kΩ	5%	0,5W	
3307	4822 116 83883	470Ω	5%	0,16W	
3308	4822 116 83883	470Ω	5%	0,16W	
3309	4822 050 24708	4,7Ω	1%	0,6W	
3310	4822 050 24708	4,7Ω	1%	0,6W	
3311	4822 050 24708	4,7Ω	1%	0,6W	
3312	4822 050 24708	4,7Ω	1%	0,6W	
3313	4822 116 83961	6,8kΩ	5%	0,16W	
3314	4822 116 83883	470Ω	5%	0,16W	
3315	4822 116 52219	330Ω	5%	0,5W	
3316	4822 050 11002	1kΩ	5%	0,2W	
3317	4822 116 83876	270Ω	5%	0,16W	
3318	4822 116 52269	3,3kΩ	5%	0,5W	
3319	4822 050 11002	1kΩ	5%	0,2W	
3320	4822 050 11002	1kΩ	5%	0,2W	
3321	4822 050 11002	1kΩ	5%	0,2W	
3322	4822 116 83884	47kΩ	5%	0,16W	not for CDR
3322	4822 116 52269	3,3kΩ	5%	0,16W	for CDR only
3323	4822 116 83884	47kΩ	5%	0,16W	
3324	4822 116 52244	15kΩ	5%	0,5W	
3325	4822 116 52269	3,3kΩ	5%	0,5W	
3326	4822 116 52283	4,7kΩ	5%	0,5W	
3327	4822 116 52213	180Ω	5%	0,5W	
3328	4822 050 11002	1kΩ	5%	0,2W	
3329	4822 053 11221	220Ω	5%	2W	
3330	4822 053 11221	220Ω	5%	2W	
3331	4822 050 23303	33kΩ	1%	0,6W	not for CDR
3331	4822 116 52269	3,3kΩ	5%	0,16W	for CDR only
3332	4822 116 52256	2,2kΩ	5%	0,16W	
3333	4822 116 52199	68Ω	5%	0,16W	
3336	4822 050 21003	10kΩ	2%	0,25W	
3337	4822 116 52206	120Ω	5%	0,5W	
3338	4822 116 52176	10Ω	5%	0,5W	
3339	4822 116 52269	3,3kΩ	5%	0,5W	
3340	4822 116 83872	220Ω	5%	0,5W	
3341	4822 116 52283	4,7kΩ	5%	0,5W	
3342	4822 050 21003	10kΩ	2%	0,25W	
3343	4822 116 52285	470kΩ	5%	0,5W	

ELECTRICAL PARTSLIST POWER2001 MODULE

RESISTORS

3344	4822 050 21003	10kΩ	2%	0,25W	
3345	4822 116 83876	270Ω	5%	0.16W	
3346	4822 116 52243	1,5kΩ	5%	0,16W	
3347	4822 116 52243	1,5kΩ	5%	0,16W	
3348	4822 050 21003	10kΩ	2%	0,25W	
3349	4822 116 52213	180Ω	5%	0,5W	
3350	4822 050 21003	10kΩ	2%	0,25W	
3351	4822 116 83868	150Ω	5%	0,5W	
3352	4822 116 52206	120Ω	5%	0,5W	
3353	4822 116 52249	1,8kΩ	5%	0,16W	
3354	4822 116 52257	22kΩ	5%	0,5W	
3355	4822 116 52256	2,2kΩ	5%	0,16W	
3356	4822 116 52234	100kΩ	5%	0,5W	
3357	4822 116 52175	100Ω	5%	0,5W	
3358	4822 116 83868	150Ω	5%	0,5W	
3359	4822 116 52234	100kΩ	5%	0,5W	
3360	4822 116 52244	15kΩ	5%	0,5W	
3361	4822 050 11002	1kΩ	5%	0,2W	
3362	4822 116 83961	6,8kΩ	5%	0,16W	
3363	4822 050 11002	1kΩ	5%	0,2W	
3368	2322 640 63103	10kΩ	NTC		
3369	4822 116 83876	270Ω	5%	0.16W	
3370	4822 050 11002	1kΩ	5%	0,2W	
3371	4822 052 10568	5,6Ω	5%	0,33W	
3372	4822 116 83884	47kΩ	5%	0,16W	
3373	4822 050 21003	10kΩ	2%	0,25W	
3374	4822 116 52213	180Ω	5%	0,5W	
3376	4822 116 83883	470Ω	5%	0,16W	
3377	4822 050 21003	10kΩ	2%	0,25W	
3378	4822 116 52231	820Ω	5%	0,5W	
3379	4822 116 83872	220Ω	5%	0,5W	
3380	4822 050 11002	1kΩ	5%	0,2W	
3381	4822 116 52234	100kΩ	5%	0,5W	
3382	4822 116 52234	100kΩ	5%	0,5W	
3383	4822 116 52234	100kΩ	5%	0,5W	
3391	4822 116 52276	3,9kΩ	5%	0,5W	
3392	4822 116 52283	4,7kΩ	5%	0,5W	not for CDR
3392	4822 116 52243	1,5kΩ	5%	0,5W	for CDR only

COILS

5202	4822 157 11832	400µH
5220	4822 157 11832	400µH
5300	4822 157 62255	COIL 18,5 TURNS
5301	4822 157 62255	COIL 18,5 TURNS
5302	4822 157 62255	COIL 18,5 TURNS
5303	4822 157 62255	COIL 18,5 TURNS

DIODES

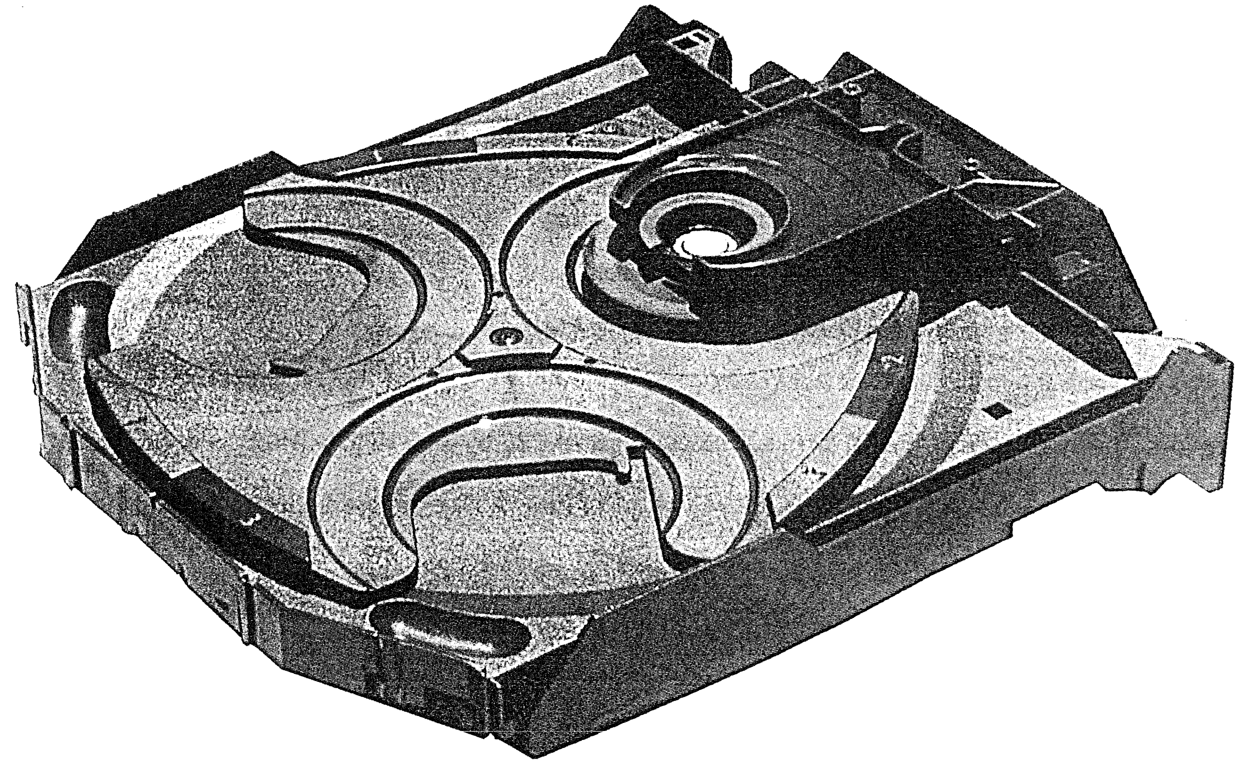
6200 ▲	4822 130 31878	1N4003G	
6201 ▲	4822 130 31878	1N4003G	
6202	4822 130 11139	GBU8D	
6203	4822 130 30621	1N4148	
6204	3198 010 58280	BZX79-B8V2	
6206	4822 130 31878	1N4003G	
6207	4822 130 34142	BZX79-B33	
6208	4822 130 30621	1N4148	
6209	4822 130 30621	1N4148	
6210	4822 130 31878	1N4003G	not for /21
6210	4822 130 32245	BYV10-40	only for /21
6211	4822 130 31878	1N4003G	not for /21
6211	4822 130 32245	BYV10-40	only for /21
6212	4822 130 32245	BYV10-40	
6213	4822 130 31878	1N4003G	not for /21
6213	4822 130 32245	BYV10-40	only for /21
6214	4822 130 31878	1N4003G	not for /21
6214	4822 130 32245	BYV10-40	only for /21
6215	4822 130 32245	BYV10-40	
6216	4822 130 34382	BZX79-B8V2	
6217	4822 130 32245	BYV10-40	
6218	4822 130 30621	1N4148	
6220 ▲	4822 130 31878	1N4003G	
6221 ▲	4822 130 31878	1N4003G	
6222	5322 130 34563	BZX79-C2V7	
6300	4822 130 31878	1N4003G	
6301	4822 130 31878	1N4003G	
6302	4822 130 31878	1N4003G	
6303	4822 130 31878	1N4003G	
6304	9340 550 66112	BYV28-200/24	
6305	4822 130 61219	BZX79-C10	
6306	4822 130 30621	1N4148	
6307	3198 010 53980	BZX79-B3V9	
6308	5322 130 31938	BYV27-200	
6309	4822 130 34281	BZX79-C15	
6310	3198 010 58280	BZX79-B8V2	
6311	4822 130 31878	1N4003G	
6312	4822 130 30621	1N4148	
6313	4822 130 30621	1N4148	
6314	4822 130 30621	1N4148	
6315	4822 130 34398	BZX79-C24	
6316	4822 130 34278	BZX79-C6V8	
6317	4822 130 30621	1N4148	
6318	4822 130 31878	1N4003G	
6319	4822 130 30621	1N4148	
6321	4822 130 30621	1N4148	
6322	3198 010 53980	BZX79-B3V9	
6323	4822 130 30621	1N4148	
6324	4822 130 34278	BZX79-C6V8	
6325	4822 130 34174	BZX79-B4V7	
6326	4822 130 30621	1N4148	
6327	4822 130 30621	1N4148	
6329	4822 130 31981	BZX79-B3V9	
6330	4822 130 30621	1N4148	
6331	4822 130 30621	1N4148	
6332	4822 130 34281	BZX79-C15	
6333	4822 130 34173	BZX79-B5V6	
6335	4822 130 30621	1N4148	

TRANSISTORS

7200	4822 130 40917	BD238
7201	4822 130 41246	BC327-25
7202	4822 130 40959	BC547B
7300	4822 130 40959	BC547B
7303	4822 130 44568	BC557B
7304	4822 130 10847	BDW94C
7305	9322 139 23687	BDX53BFP
7306	4822 130 40995	BD438
7307	4822 130 41691	BC556B
7308	4822 130 40855	BC337-40
7309	4822 130 11336	STP16NE06FP
7310	4822 130 44568	BC557B
7311	4822 130 40959	BC547B
7312	4822 130 40959	BC547B
7313	4822 130 44568	BC557B
7314	4822 130 44503	BC547C
7315	4822 130 40959	BC547B
7316	4822 130 40959	BC547B
7317	4822 130 10847	BDW94C
7319	5322 130 44647	BC368
7320	4822 130 40995	BD438
7321	4822 130 40959	BC547B
7322	4822 130 40959	BC547B
7323	4822 130 40959	BC547B
7324	4822 130 40959	BC547B
7325	4822 130 40959	BC547B
7327	4822 130 41246	BC327-25
7328	4822 130 44568	BC557B
7330	4822 130 11336	STP16NE06FP
7331	4822 130 40959	BC547B
7332	4822 130 40855	BC337-40

INTEGRATED CIRCUITS

7301	9322 161 89682	AN7591, Power amplifier
7302	9322 161 89682	AN7591, Power amplifier
7318	4822 209 31841	L7805CP, Stabilizer 5V



3CDC-LC-CDR

(3 Disc Carousel Changer)

Layout stage .6

TABLE OF CONTENTS

Service Hints 10-2
Wiring 10-4
Blockdiagram 10-5
Component Layout Main Board 10-6
Circuit Diagram part 1 10-7
Component Layout Main Board 10-8
Circuit Diagram part 2 10-9
Circuit Diagram part 3 10-10
Exploded View 10-10
Partslist 10-12

Service hints

CAUTION

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE
- *SWITCH OFF POWER SUPPLY*
- *ESD PROTECTION*

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CD mechanism:
1. Disconnect flexfoil cable from the old CD drive
2. Put a paperclip onto the flexfoil cable to short-circuit the contacts (fig.1)
3. Remove the old CD drive
4. Remove paperclip from the flexfoil cable and connect it to the new CD drive
5. Position the new CD drive on its studs
6. Remove solder joint from the Laser unit (see below)

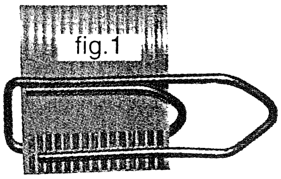
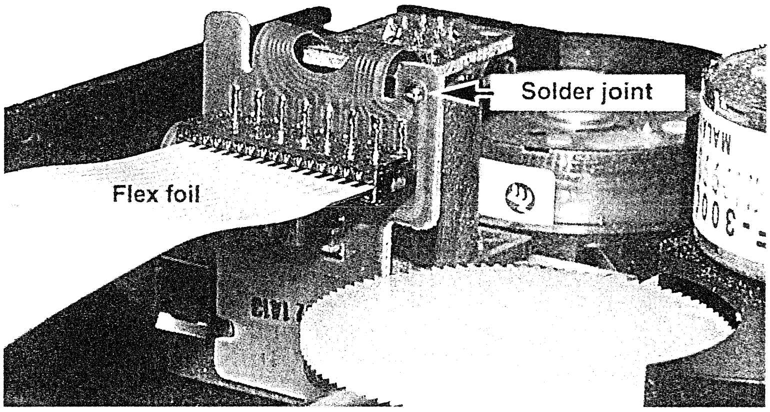


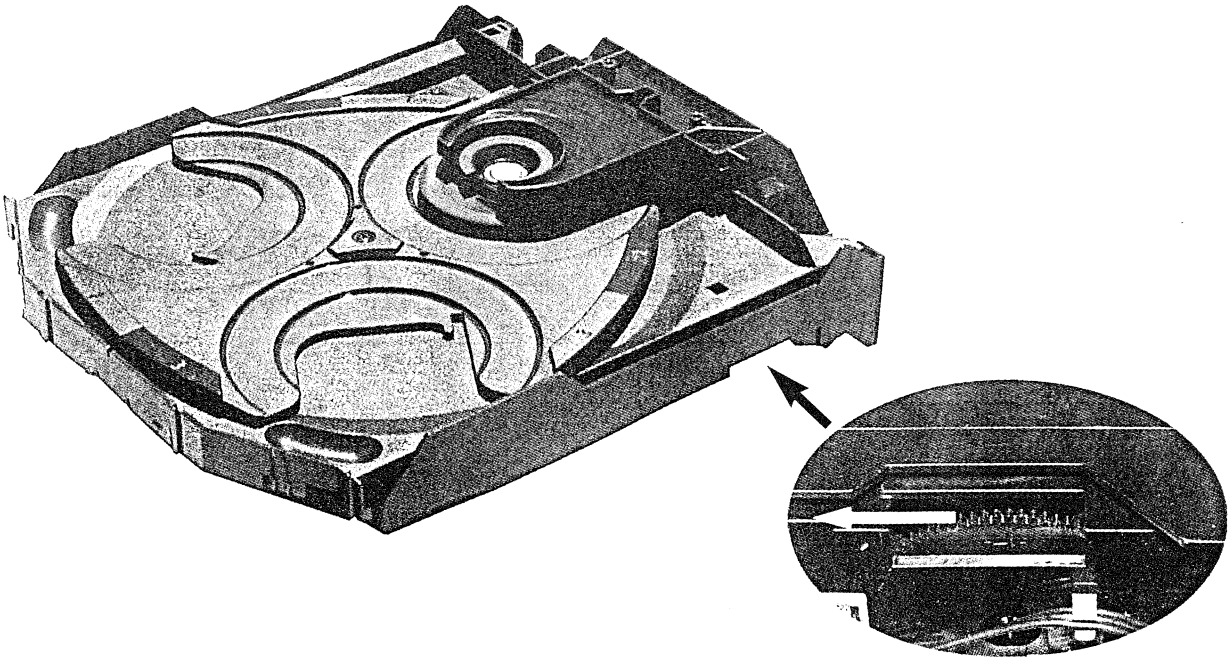
fig.1

Attention: The laser diode of this CD drive is protected against ESD by a solder joint which short-circuits the laserdiode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connecting the drive to the set.



Emergency open

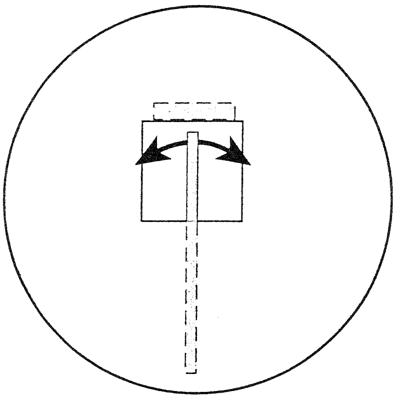
In case of a Supply fault, the tray can be opened manually.
1. Remove the top cover of the set to get access to the Changer Module.
2. Turn gearwheel clockwise (as shown in picture below).



Service hints

Dismantling of Tray

1. Open the tray.
2. Release 2x catch as shown in fig. 2 and Detail A
3. Pull tray out.



Detail A

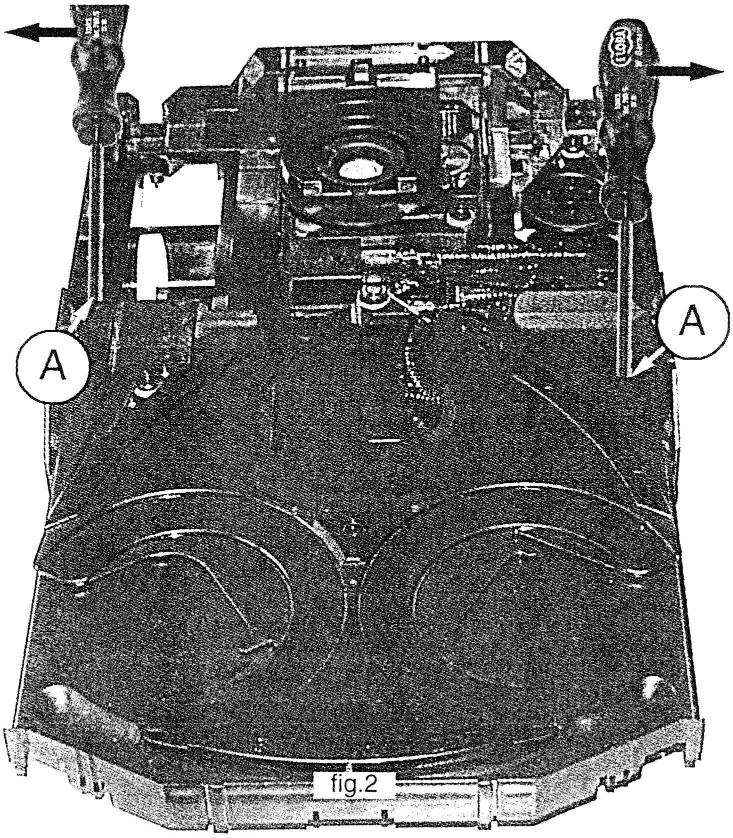
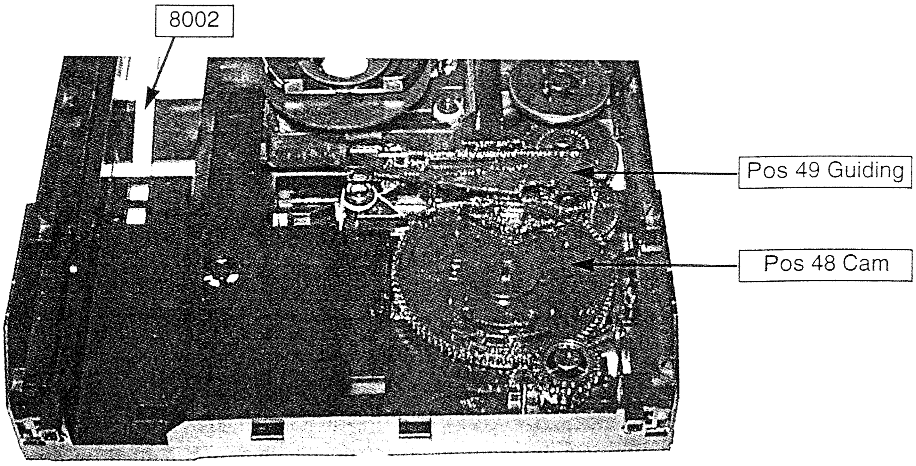
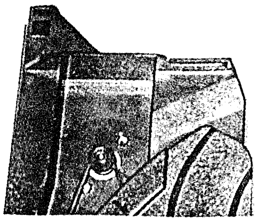


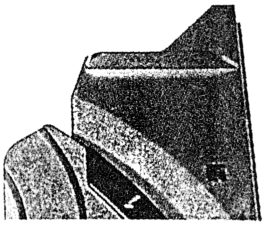
fig.2

Assembling of Tray

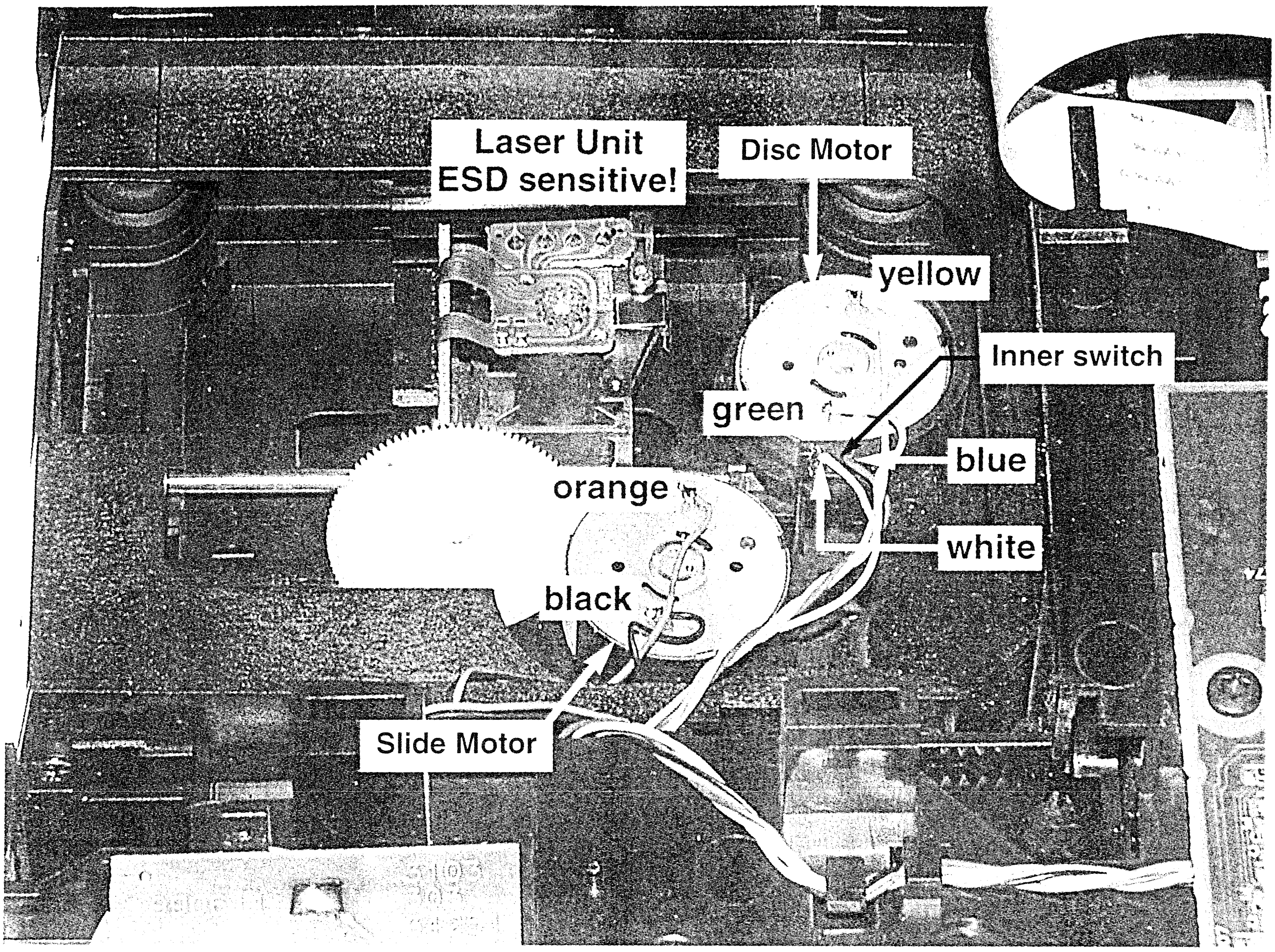
1. Turn Cam (pos. 48) clockwise to end position.
2. If necessary - move Guiding (pos. 49) to the right end position.
3. Insert the Tray.


8002
Pos 49 Guiding
Pos 48 Cam

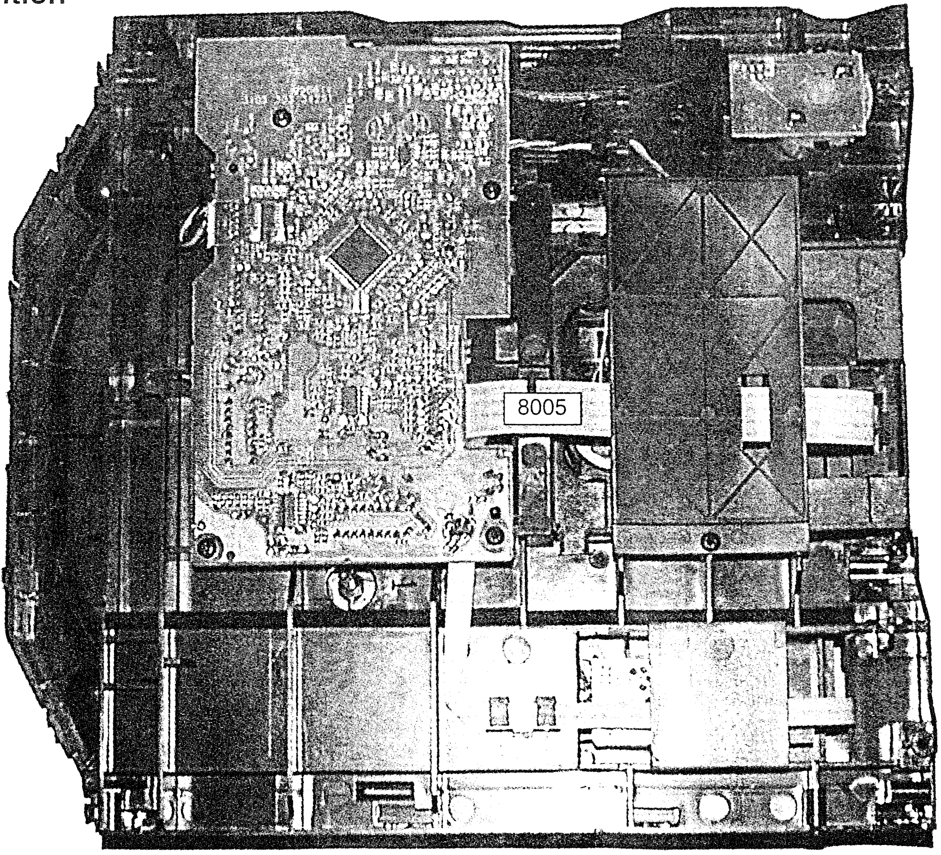




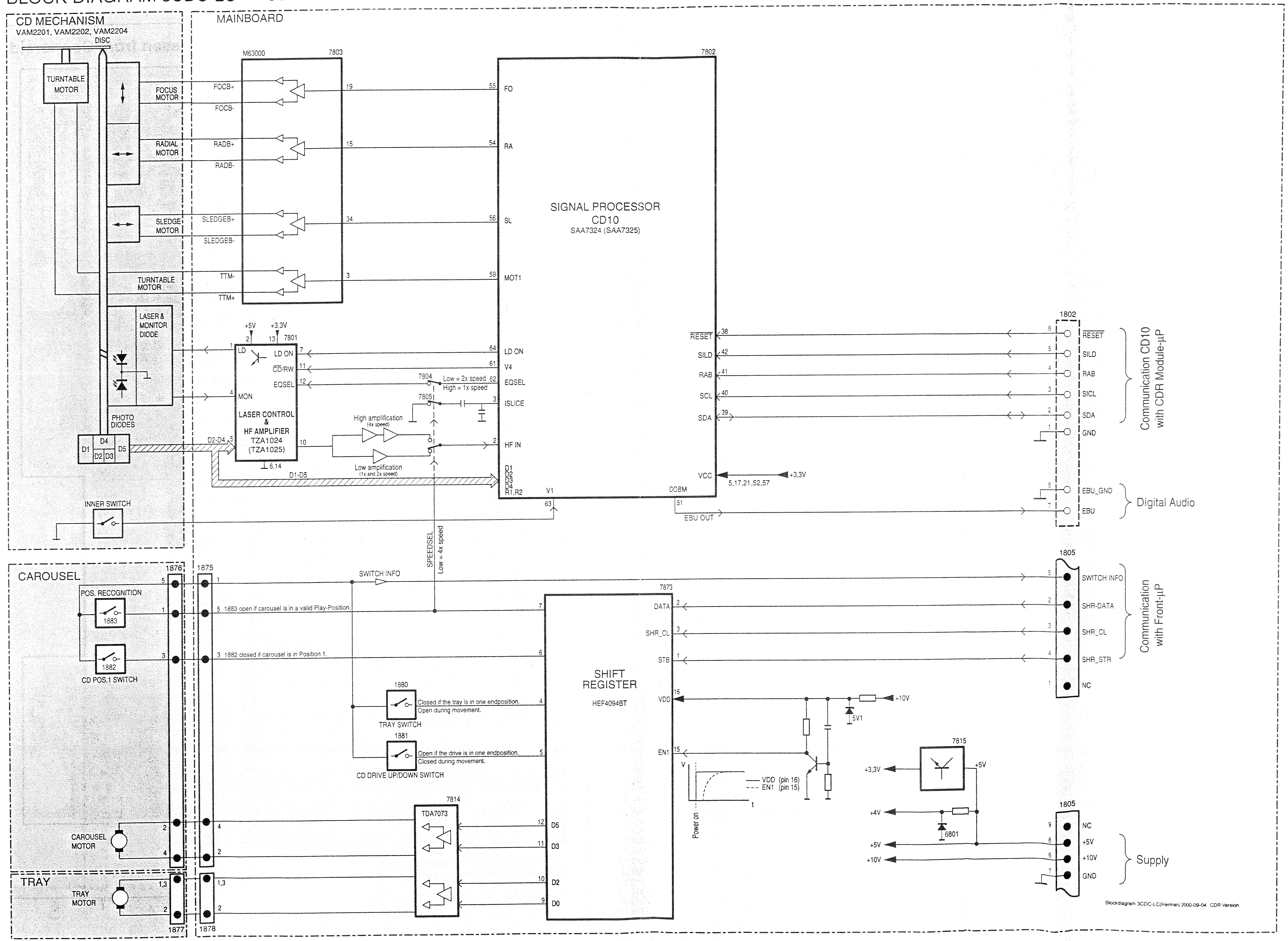
Wiring


Laser Unit
ESD sensitive!
Disc Motor
yellow
Inner switch
green
blue
orange
white
black
Slide Motor

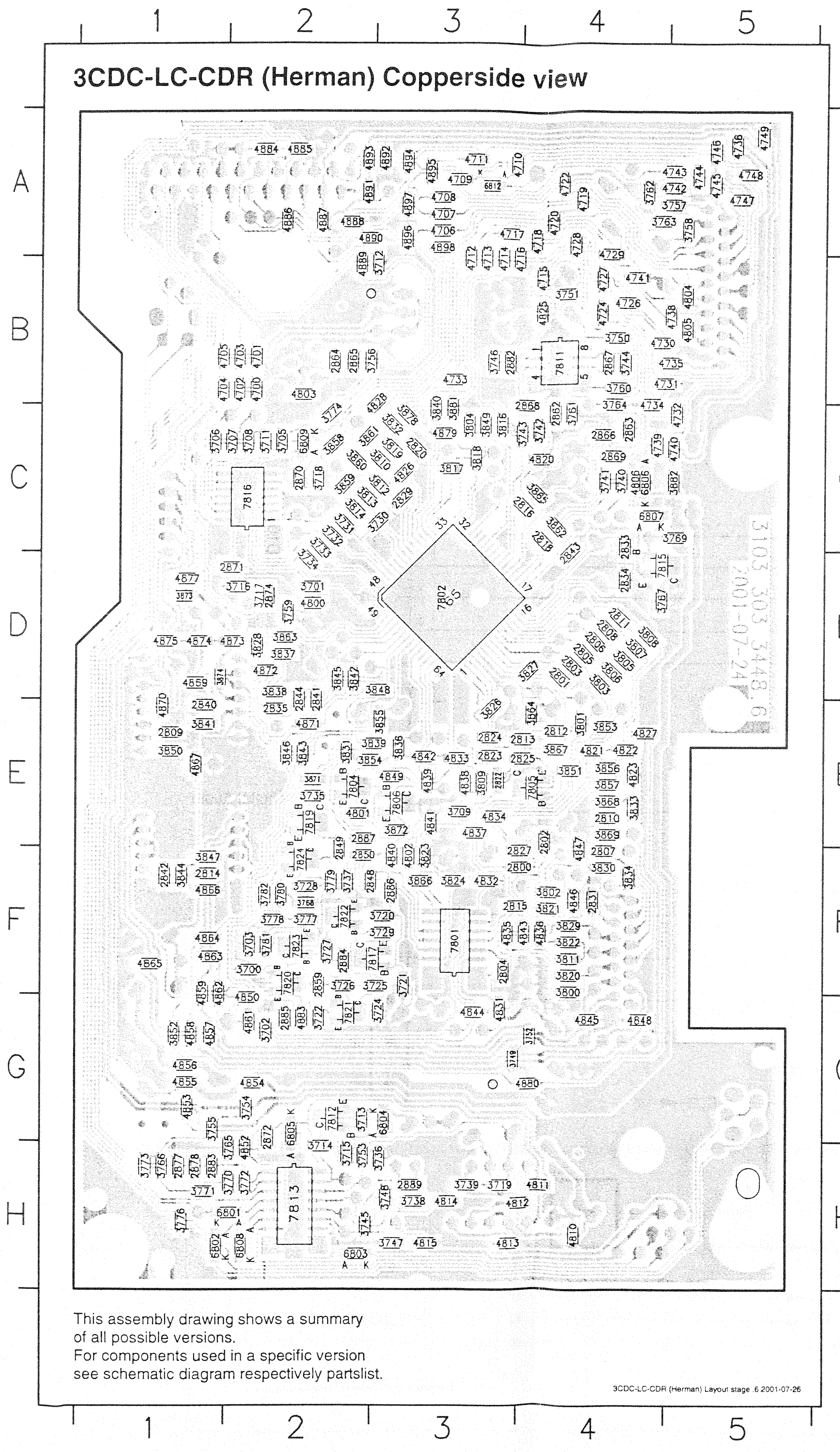
Service Position



BLOCK DIAGRAM 3CDC-LC CDR Version


CD MECHANISM
VAM2201, VAM2202, VAM2204
DISC
TURNTABLE MOTOR
FOCUS MOTOR
RADIAL MOTOR
SLEDGE MOTOR
TURNTABLE MOTOR
LASER & MONITOR DIODE
PHOTO DIODES
D1
D2
D3
D4
D5
INNER SWITCH
MAINBOARD
M63000
7803
FOCB+
FOCB-
RADB+
RADB-
SLEDGEB+
SLEDGEB-
TTM-
TTM+
7802
SIGNAL PROCESSOR
CD10
SAA7324 (SAA7325)
FO
RA
SL
MOT1
LD ON
V4
EQSEL
ISLICE
HF IN
D1 D2 D3 D4 R1,R2
V1
DOBM
EBU OUT
RESET
SILD
RAB
SCL
SDA
VCC
5,17,21,52,57
+3,3V
+5V
+3,3V
7801
LD
LD ON
CD/RW
EQSEL
MON
LASER CONTROL & HF AMPLIFIER
TZA1024 (TZA1025)
6,14
D2-D4
D1-D5
7804
Low = 2x speed
High = 1x speed
7805
High amplification (4x speed)
Low amplification (1x and 2x speed)
SPEEDSEL
Low = 4x speed
1802
RESET
SILD
RAB
SICL
SDA
GND
EBU_GND
EBU
Communication CD10 with CDR Module-µP
Digital Audio
CAROUSEL
1876
1875
POS. RECOGNITION
1883
1882
CD POS.1 SWITCH
SWITCH INFO
1883 open if carousel is in a valid Play-Position.
1882 closed if carousel is in Position 1.
1880
Closed if the tray is in one endposition.
Open during movement.
TRAY SWITCH
1881
Open if the drive is in one endposition.
Closed during movement.
CD DRIVE UP/DOWN SWITCH
7873
SHIFT REGISTER
HEF4094BT
DATA
SHR_CL
STB
VDD
EN1
D5
D3
D2
D0
7814
TDA7073
CAROUSEL MOTOR
TRAY
TRAY MOTOR
1877
1878
1805
SWITCH INFO
SHR-DATA
SHR_CL
SHR_STR
NC
Communication with Front-µP
+10V
5V1
V
VDD (pin 16)
EN1 (pin 15)
Power on
t
7815
+3,3V
+5V
+4V
6801
+5V
+10V
1805
NC
+5V
+10V
GND
Supply
Blockdiagram 3CDC-LC(Herman) 2000-09-04 CDR Version

3CDC-LC-CDR (Herman) Copperside view



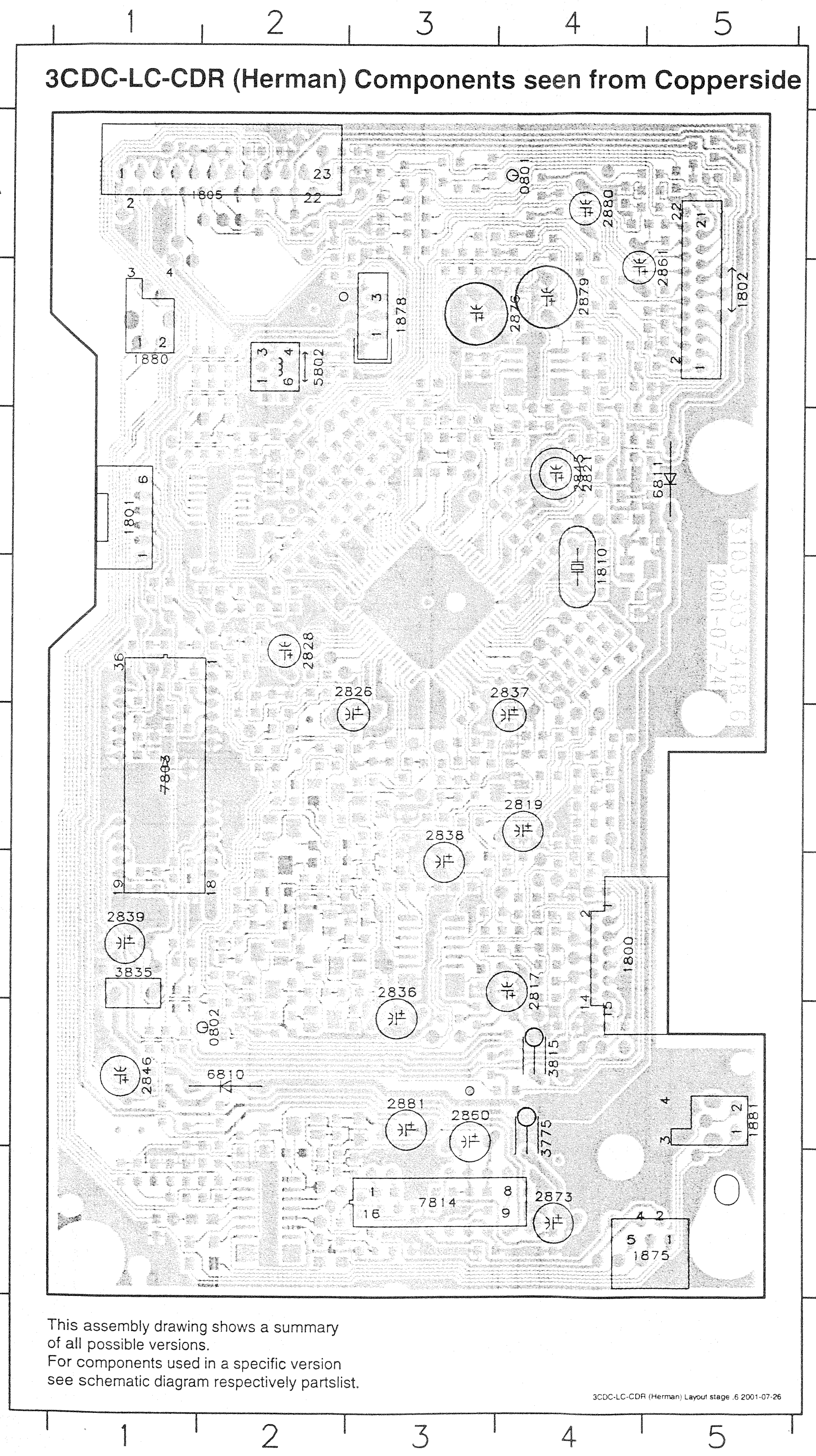
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LC-CDR (Herman) Layout stage .6 2001-07-26

Mapping

Copperside										Componentside	
2800	F4	3734	D2	3845	D2	4815	H3	7817	F3	0801	A4
2801	D4	3735	E2	3846	E2	4820	C4	7819	E2	0802	G2
2802	E4	3736	H3	3847	F1	4821	E4	7820	F2	1800	F4
2803	D4	3737	F2	3848	D3	4822	E4	7821	G2	1801	C1
2804	F3	3738	H3	3849	C3	4823	E4	7822	F2	1802	B5
2805	D4	3739	H3	3850	E1	4825	B4	7823	F2	1805	A2
2806	D4	3740	C4	3851	E4	4826	C3	7824	F2	1810	D4
2807	F4	3741	C4	3852	G1	4827	E4			1875	H5
2808	D4	3742	C4	3853	E4	4828	C3			1878	B3
2809	E1	3743	C4	3854	E2	4831	G3			1880	B1
2810	E4	3744	B4	3855	E3	4832	F3			1881	G5
2811	D4	3745	H2	3856	E4	4833	E3			2817	F4
2812	E4	3746	B3	3857	E4	4834	E3			2819	E4
2813	E4	3747	H3	3858	C2	4835	F3			2821	C4
2814	F1	3748	H3	3859	C2	4836	F4			2826	D3
2815	F3	3749	G3	3860	C2	4837	E3			2828	D2
2816	C4	3750	B4	3861	C2	4838	E3			2836	F3
2818	C4	3751	B4	3862	C4	4839	E3			2837	D4
2820	C3	3752	G4	3863	D2	4840	F3			2838	E3
2822	E3	3753	H2	3864	E4	4841	E3			2839	F1
2823	E3	3754	G2	3865	C4	4842	E3			2845	C4
2824	E3	3755	G1	3866	F3	4843	F4			2846	G1
2825	E4	3756	B2	3867	E4	4844	G3			2860	G3
2827	F4	3757	A5	3868	E4	4845	G4			2861	B5
2829	C3	3758	A5	3869	E4	4846	F4			2873	H4
2831	F4	3759	D2	3871	E2	4847	F4			2876	B3
2833	C4	3760	B4	3872	E3	4848	G4			2879	B4
2834	D4	3761	C4	3873	D1	4849	E3			2880	A4
2835	E2	3762	A4	3874	D1	4850	G2			2881	G3
2840	E1	3763	A4	3878	C3	4852	H2			3775	G4
2841	E2	3764	C4	3881	C3	4853	G1			3815	G4
2842	F1	3765	H2	3882	C5	4854	G2			3835	F1
2843	D4	3766	H1	4700	B2	4855	G1			5802	B2
2844	E2	3767	D4	4701	B2	4856	G1			6810	G2
2848	F2	3768	F2	4702	B2	4857	G1			6811	C5
2849	F2	3769	C5	4703	B2	4858	G1			7803	E1
2850	F2	3770	H2	4704	B1	4859	F1			7814	H3
2859	F2	3771	H1	4705	B1	4861	G2				
2862	C4	3772	H2	4706	A3	4862	F1				
2863	C4	3773	H1	4707	A3	4863	F1				
2864	B2	3774	C2	4708	A3	4864	F1				
2865	B2	3776	H1	4709	A3	4865	F1				
2866	C4	3777	F2	4710	A3	4866	F1				
2867	B4	3778	F2	4711	A3	4867	E1				
2868	C4	3779	F2	4712	B3	4869	D1				
2869	C4	3780	F2	4713	B3	4870	E1				
2870	C2	3781	F2	4714	B3	4871	E2				
2871	D2	3782	F2	4715	B4	4872	D2				
2872	G2	3800	F4	4716	B3	4873	D2				
2874	D2	3801	E4	4717	A3	4874	D1				
2877	H1	3802	F4	4718	A4	4875	D1				
2878	H1	3803	D4	4719	A4	4877	D1				
2882	B3	3804	C3	4720	A4	4879	C3				
2883	H1	3805	D4	4722	A4	4880	G4				
2884	F2	3806	D4	4724	B4	4883	G2				
2885	G2	3807	D4	4726	B4	4884	A2				
2886	F3	3808	D4	4727	B4	4885	A2				
2887	E2	3809	E3	4728	A4	4886	A2				
2889	H3	3810	C3	4729	A4	4887	A2				
3700	F2	3811	F4	4730	B4	4888	A2				
3701	D2	3812	C3	4731	B4	4889	B2				
3702	G2	3813	C2	4732	C5	4890	A2				
3703	F2	3814	C2	4733	B3	4891	A2				
3705	C2	3816	C3	4734	C4	4892	A3				
3706	C1	3817	C3	4735	B5	4893	A2				
3707	C2	3818	C3	4736	A5	4894	A3				
3708	C2	3819	C3	4738	B5	4895	A3				
3709	E3	3820	F4	4739	C4	4896	A3				
3711	C2	3821	F4	4740	C5	4897	A3				
3712	B3	3822	F4	4741	B4	4898	A3				
3713	G2	3823	F3	4742	A5	6801	H2				
3714	H2	3824	F3	4743	A5	6802	H1				
3715	H2	3826	E3	4744	A5	6803	H2				
3716	D2	3827	D4	4745	A5	6804	G3				
3717	D2	3828	D2	4746	A5	6805	G2				
3718	C2	3829	F4	4747	A5	6806	C4				
3719	H3	3830	F4	4748	A5	6807	C4				
3720	F3	3831	E2	4749	A5	6808	H2				
3721	F3	3832	C3	4800	D2	6809	C2				
3722	G2	3833	E4	4801	E2	6812	A3				
3724	G3	3834	F4	4802	F3	7801	F3				
3725	F3	3836	E3	4803	B2	7802	D3				
3726	F2	3837	D2	4804	B5	7804	E2				
3727	F2	3838	D2	4805	B5	7805	E4				
3728	F2	3839	E3	4806	C4	7806	E3				
3729	F3	3840	C3	4810	H4	7811	B4				
3730	C3	3841	E1	4811	H4	7812	G2				
3731	C2	3842	D2	4812	H4	7813	H2				
3732	C2	3843	E2	4813	H3	7815	D4				
3733	C2	3844	F1	4814	H3	7816	C2				

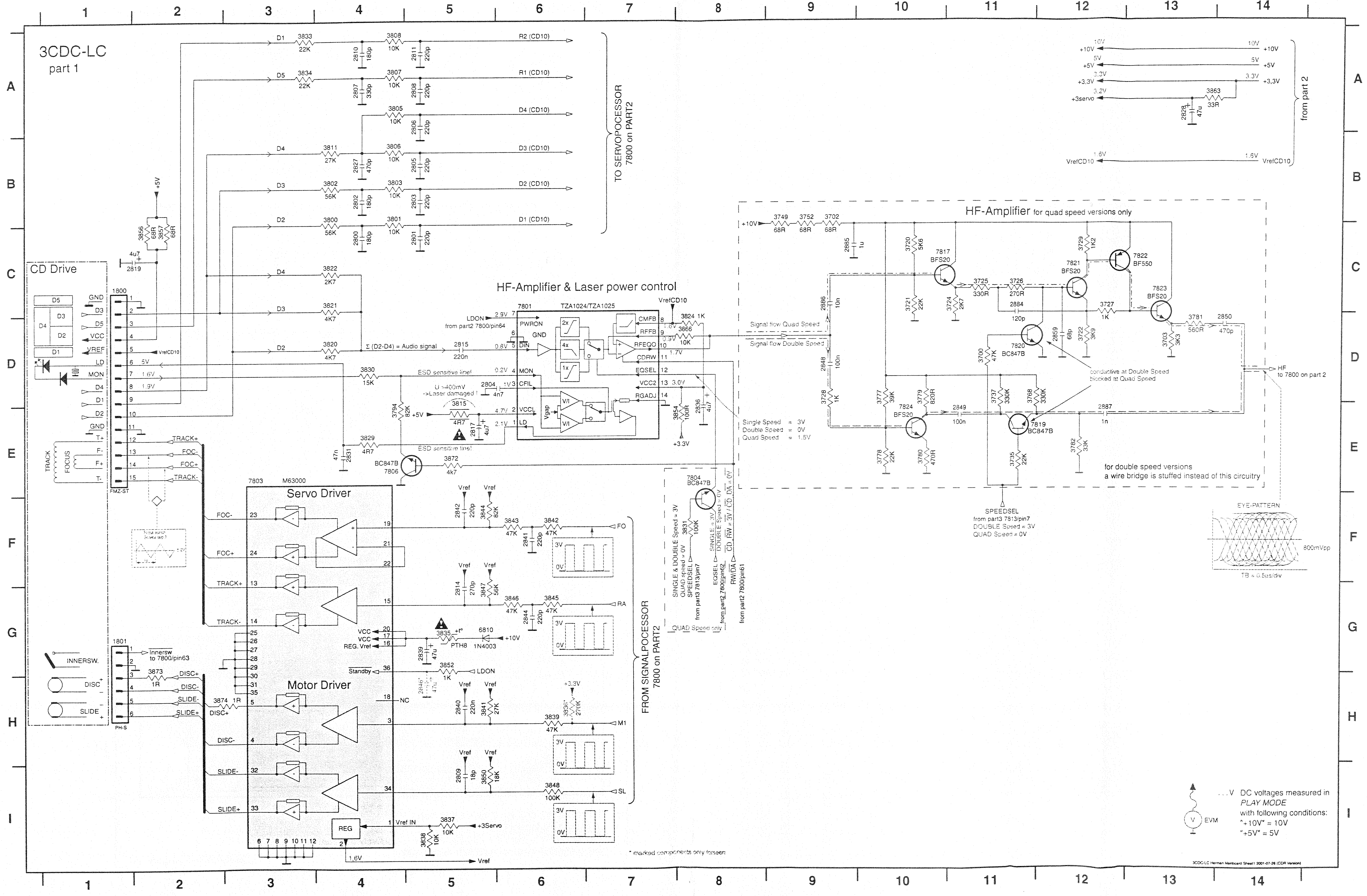
3CDC-LC-CDR (Herman) Components seen from Copperside

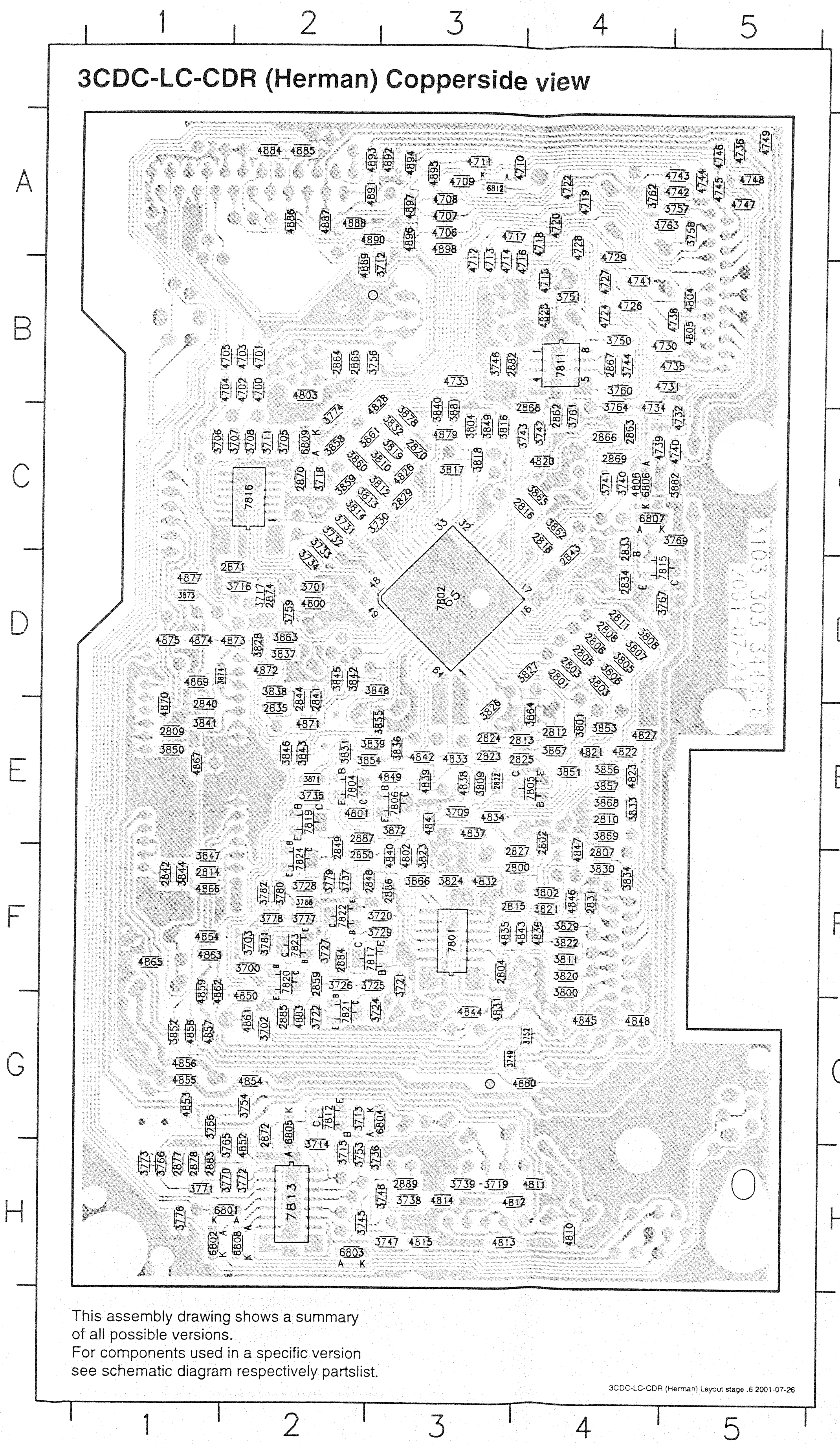


This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LC-CDR (Herman) Layout stage .6 2001-07-26

1800	C1
1801	G1
2800	C4
2801	C5
2802	B4
2803	B5
2804	D6
2805	B5
2806	A5
2807	A4
2808	A5
2809	I5
2810	A4
2811	A5
2814	G5
2815	D5
2817	E5
2819	C2
2827	B4
2828	A13
2830	H6
2831	E4
2832	I6
2835	I5
2836	E8
2839	G5
2840	H5
2841	F6
2842	F5
2844	G6
2846	H5
2848	D9
2849	E11
2850	D14
2851	E9
2859	D12
2878	D10
2884	C11
2885	C9
2886	C9
2887	E12
3700	D11
3702	C9
3703	D13
3720	C10
3721	C10
3722	D12
3724	C11
3725	C11
3726	C11
3727	C12
3728	D9
3729	C12
3735	E11
3777	D10
3778	E10
3779	D10
3780	E10
3781	D13
3782	E12
3800	B4
3801	B4
3802	B4
3803	B4
3805	A4
3806	B4
3807	A4
3808	A4
3811	B4
3815	E5
3820	D4
3821	C4
3822	C4
3824	D8
3829	E4
3830	D4
3831	F8
3833	A3
3834	A3
3835	G5
3836	H6
3837	I5
3838	I5
3839	H6
3841	H5
3842	F6
3843	F6
3844	F5
3845	G6
3846	G6
3847	G5
3848	I6
3850	I5
3852	H5
3854	E8
3856	C2
3857	C2
3863	A13
3866	D8
3868	A4
3869	A4
3872	E5
3873	G2
3874	H2
7801	D6
7803	E3
7804	E8
7806	E5
7817	C10
7819	E11
7820	D11
7821	C12
7822	C13
7823	C13
7824	E10


3CDC-LC
part 1
CD Drive
D5
D3
D4
D2
D1
GND
VCC
VREF
LD
MON
T+
F-
F+
T-
TRACK
FOCUS
1800
FMZ-ST
1801
PH-S
INNERSW.
DISC
SLIDE
Innersw
to 7800/pin63
DISC+
DISC-
SLIDE-
SLIDE+
TRACK+
FOC-
FOC+
TRACK-
4u7
2819
3856 68R
3857 68R
+5V
VrefCD10
6 5V
7 1.6V
8 1.9V
3873 1R
3874 1R
3833 22K
3808 10K
2810 180p
2811 220p
R2 (CD10)
3834 22K
3807 10K
2807 330p
2808 220p
R1 (CD10)
3805 10K
2806 220p
D4 (CD10)
3811 27K
3806 10K
2827 470p
2805 220p
D3 (CD10)
3802 56K
3803 10K
2802 180p
2803 220p
D2 (CD10)
3800 56K
3801 10K
2800 180p
2801 220p
D1 (CD10)
TO SERVOPOCESSOR
7800 on PART2
3822 2K7
3821 4K7
3820 4K7
Σ (D2-D4) = Audio signal
2815 220n
3830 15K
ESD sensitive line!
U >400mV
->Laser damaged !
3815 4R7
2804 4n7
2817 4u7
3794 82K
3829 4R7
2831 47n
3872 4k7
BC847B
7806
ESD sensitive line!
HF-Amplifier & Laser power control
7801
TZA1024/TZA1025
LDON
from part2 7800/pin64
PWRON
GND
DIN
MON
CFIL
VCCL
LD
2.9V
0.8V
0.2V
+V3
4.7V
2.1V
VrefCD10
CMFB
RFFB
RFEQO
CDRW
EQSEL
VCC2
RGADJ
3824 1K
3866 10K
1.6V
0.9V
1.7V
3.0V
3854 100R
2836 4u7
+3.3V
Signal flow Quad Speed
Signal flow Double Speed
Single Speed = 3V
Double Speed = 0V
Quad Speed = 1.5V
7804
BC847B
3831 100K
SINGLE & DOUBLE Speed = 3V
QUAD speed = 0V
SPEEDSEL
from part3 7813/pin7
SINGLE = 3V
DOUBLE Speed = 0V
EQSEL
from part2 7800/pin62
CD RW = 3V / CD DA = 0V
RW/DA
from part2 7800/pin61
QUAD Speed only
10V
+10V
5V
+5V
3.3V
+3,3V
3.2V
+3servo
3863 33R
2828 47u
1.6V
VrefCD10
from part 2
HF-Amplifier for quad speed versions only
+10V
3749 68R
3752 68R
3702 68R
2885 1u
3720 5K6
7817 BFS20
3721 22K
3724 2K7
3725 330R
3726 270R
2884 120p
3729 1K2
7821 BFS20
7822 BF550
7823 BFS20
3727 1K
3722 3K9
2859 68p
7820 BC847B
3700 47K
3703 3K3
3781 560R
2850 470p
2886 10n
2848 100n
3728 1K
3777 39K
7824 BFS20
3779 820R
2849 100n
3737 330K
3768 330K
7819 BC847B
2887 1n
3778 22K
3780 470R
3735 22K
3782 33K
conductive at Double Speed
blocked at Quad Speed
HF
to 7800 on part 2
for double speed versions
a wire bridge is stuffed instead of this circuitry
SPEEDSEL
from part3 7813/pin7
DOUBLE Speed = 3V
QUAD Speed = 0V
EYE-PATTERN
800mVpp
TB = 0.5us/div
7803
M63000
Servo Driver
FOC-
FOC+
TRACK+
TRACK-
VCC
REG. Vref
Standby
Motor Driver
DISC+
DISC-
SLIDE-
SLIDE+
REG
Vref IN
NC
1,6V
Vref
Vref
2842 220p
3844 82K
3843 47K
3842 47K
2841 220p
FO
2814 270p
3847 56K
3846 47K
3845 47K
2844 220p
RA
3835 PTH8
6810 1N4003
+10V
2839 47u
3852 1K
LDON
2840 220n
3841 27K
3839 47K
3836* 270K
+3,3V
M1
2809 18p
3850 18K
3848 100K
SL
3837 10K
+3Servo
3838 10K
3V
0V
FROM SIGNALPOCESSOR
7800 on PART2
* marked components only forseen
...V DC voltages measured in
PLAY MODE
with following conditions:
"+10V" = 10V
"+5V" = 5V
EVM
3CDC-LC Herman Mainboard Sheet1 2001-07-26 (CDR Version)
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I



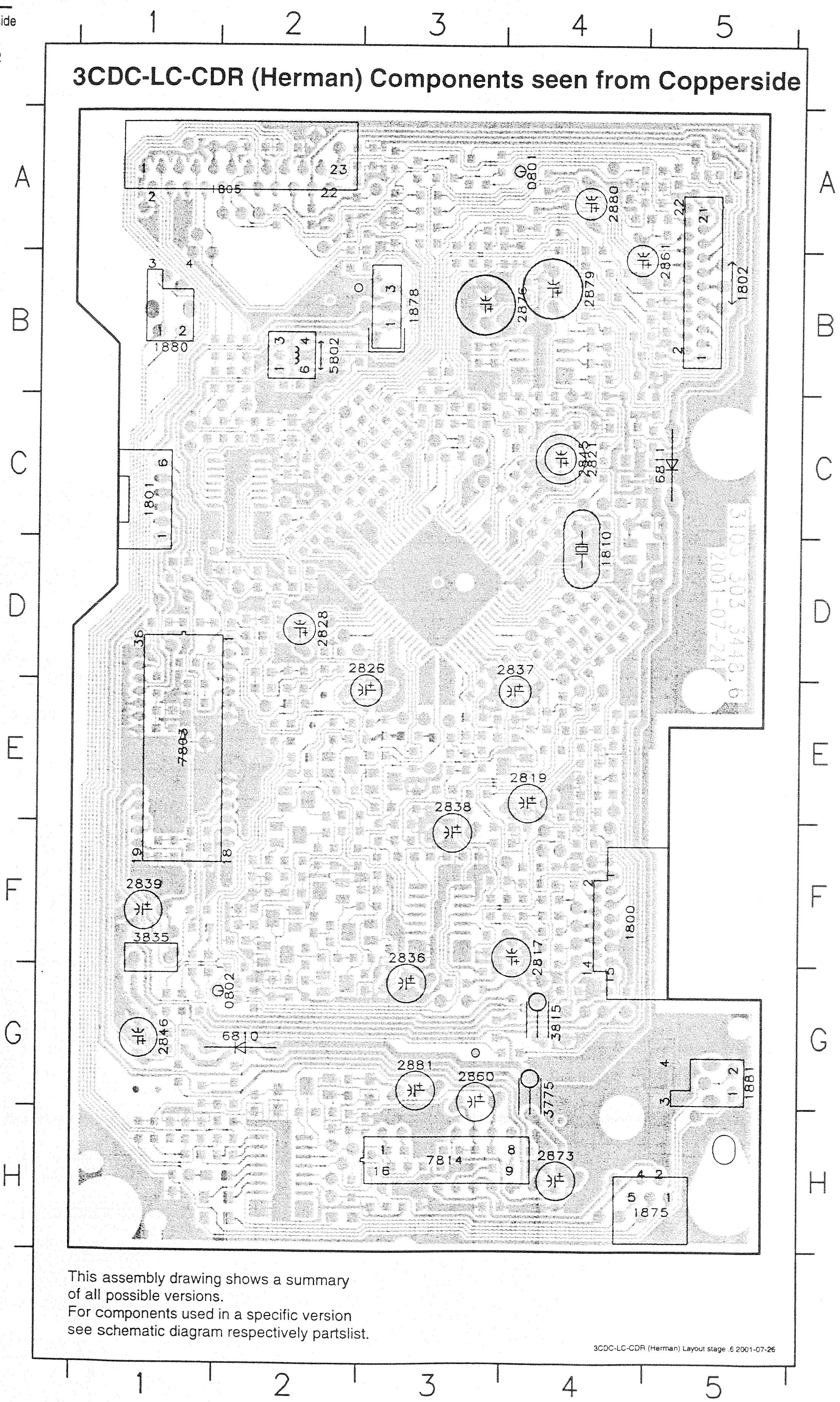
3CDC-LC-CDR (Herman) Copperside view

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

3CDC-LC-CDR (Herman) Layout stage .6 2001-07-26

Mapping

Copperside										Componentside	
2800	F4	3734	D2	3845	D2	4815	H3	7817	F3	0801	A4
2801	D4	3735	E2	3846	E2	4820	C4	7819	E2	0802	G2
2802	E4	3736	H3	3847	F1	4821	E4	7820	F2	1800	F4
2803	D4	3737	F2	3848	D3	4822	E4	7821	G2	1801	C1
2804	F3	3738	H3	3849	C3	4823	E4	7822	F2	1802	B5
2805	D4	3739	H3	3850	E1	4825	B4	7823	F2	1805	A2
2806	D4	3740	C4	3851	E4	4826	C3	7824	F2	1810	D4
2807	F4	3741	C4	3852	G1	4827	E4			1875	H5
2808	D4	3742	C4	3853	E4	4828	C3			1878	B3
2809	E1	3743	C4	3854	E2	4831	G3			1880	B1
2810	E4	3744	B4	3855	E3	4832	F3			1881	G5
2811	D4	3745	H2	3856	E4	4833	E3			2817	F4
2812	E4	3746	B3	3857	E4	4834	E3			2819	E4
2813	E4	3747	H3	3858	C2	4835	F3			2821	C4
2814	F1	3748	H3	3859	C2	4836	F4			2826	D3
2815	F3	3749	G3	3860	C2	4837	E3			2828	D2
2816	C4	3750	B4	3861	C2	4838	E3			2836	F3
2818	C4	3751	B4	3862	C4	4839	E3			2837	D4
2820	C3	3752	G4	3863	D2	4840	F3			2838	E3
2822	E3	3753	H2	3864	E4	4841	E3			2839	F1
2823	E3	3754	G2	3865	C4	4842	E3			2845	C4
2824	E3	3755	G1	3866	F3	4843	F4			2846	G1
2825	E4	3756	B2	3867	E4	4844	G3			2860	G3
2827	F4	3757	A5	3868	E4	4845	G4			2861	B5
2829	C3	3758	A5	3869	E4	4846	F4			2873	H4
2831	F4	3759	D2	3871	E2	4847	F4			2876	B3
2833	C4	3760	B4	3872	E3	4848	G4			2879	B4
2834	D4	3761	C4	3873	D1	4849	E3			2880	A4
2835	E2	3762	A4	3874	D1	4850	G2			2881	G3
2840	E1	3763	A4	3878	C3	4852	H2			3775	G4
2841	E2	3764	C4	3881	C3	4853	G1			3815	G4
2842	F1	3765	H2	3882	C5	4854	G2			3835	F1
2843	D4	3766	H1	4700	B2	4855	G1			5802	B2
2844	E2	3767	D4	4701	B2	4856	G1			6810	G2
2848	F2	3768	F2	4702	B2	4857	G1			6811	C5
2849	F2	3769	C5	4703	B2	4858	G1			7803	E1
2850	F2	3770	H2	4704	B1	4859	F1			7814	H3
2859	F2	3771	H1	4705	B1	4861	G2				
2862	C4	3772	H2	4706	A3	4862	F1				
2863	C4	3773	H1	4707	A3	4863	F1				
2864	B2	3774	C2	4708	A3	4864	F1				
2865	B2	3776	H1	4709	A3	4865	F1				
2866	C4	3777	F2	4710	A3	4866	F1				
2867	B4	3778	F2	4711	A3	4867	E1				
2868	C4	3779	F2	4712	B3	4869	D1				
2869	C4	3780	F2	4713	B3	4870	E1				
2870	C2	3781	F2	4714	B3	4871	E2				
2871	D2	3782	F2	4715	B4	4872	D2				
2872	G2	3800	F4	4716	B3	4873	D2				
2874	D2	3801	E4	4717	A3	4874	D1				
2877	H1	3802	F4	4718	A4	4875	D1				
2878	H1	3803	D4	4719	A4	4877	D1				
2882	B3	3804	C3	4720	A4	4879	C3				
2883	H1	3805	D4	4722	A4	4880	G4				
2884	F2	3806	D4	4724	B4	4883	G2				
2885	G2	3807	D4	4726	B4	4884	A2				
2886	F3	3808	D4	4727	B4	4885	A2				
2887	E2	3809	E3	4728	A4	4886	A2				
2889	H3	3810	C3	4729	A4	4887	A2				
3700	F2	3811	F4	4730	B4	4888	A2				
3701	D2	3812	C3	4731	B4	4889	B2				
3702	G2	3813	C2	4732	C5	4890	A2				
3703	F2	3814	C2	4733	B3	4891	A2				
3705	C2	3816	C3	4734	C4	4892	A3				
3706	C1	3817	C3	4735	B5	4893	A2				
3707	C2	3818	C3	4736	A5	4894	A3				
3708	C2	3819	C3	4738	B5	4895	A3				
3709	E3	3820	F4	4739	C4	4896	A3				
3711	C2	3821	F4	4740	C5	4897	A3				
3712	B3	3822	F4	4741	B4	4898	A3				
3713	G2	3823	F3	4742	A5	6801	H2				
3714	H2	3824	F3	4743	A5	6802	H1				
3715	H2	3826	E3	4744	A5	6803	H2				
3716	D2	3827	D4	4745	A5	6804	G3				
3717	D2	3828	D2	4746	A5	6805	G2				
3718	C2	3829	F4	4747	A5	6806	C4				
3719	H3	3830	F4	4748	A5	6807	C4				
3720	F3	3831	E2	4749	A5	6808	H2				
3721	F3	3832	C3	4800	D2	6809	C2				
3722	G2	3833	E4	4801	E2	6812	A3				
3724	G3	3834	F4	4802	F3	7801	F3				
3725	F3	3836	E3	4803	B2	7802	D3				
3726	F2	3837	D2	4804	B5	7804	E2				
3727	F2	3838	D2	4805	B5	7805	E4				
3728	F2	3839	E3	4806	C4	7806	E3				
3729	F3	3840	C3	4810	H4	7811	B4				
3730	C3	3841	E1	4811	H4	7812	G2				
3731	C2	3842	D2	4812	H4	7813	H2				
3732	C2	3843	E2	4813	H3	7815	D4				
3733	C2	3844	F1	4814	H3	7816	C2				

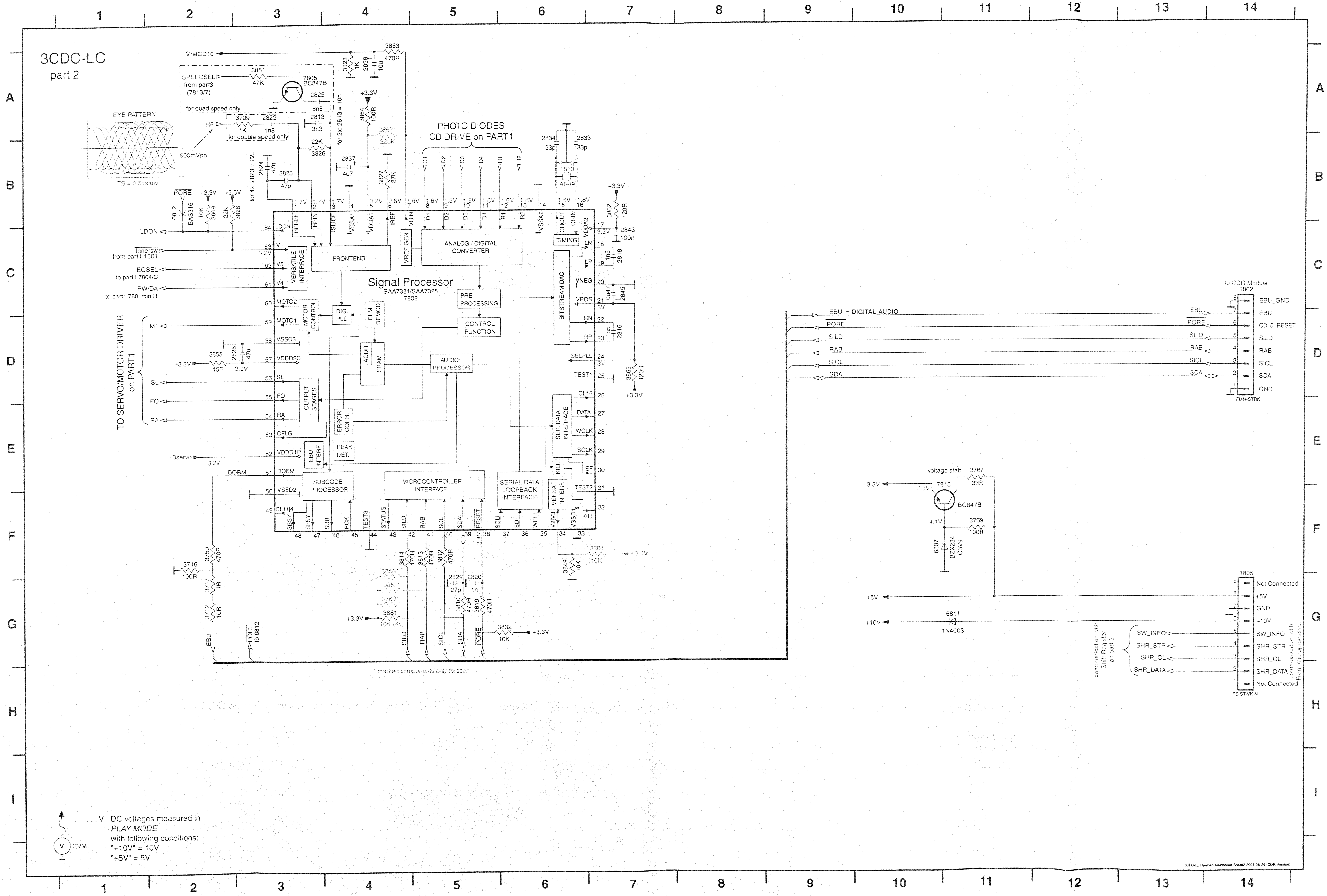


3CDC-LC-CDR (Herman) Components seen from Copperside

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

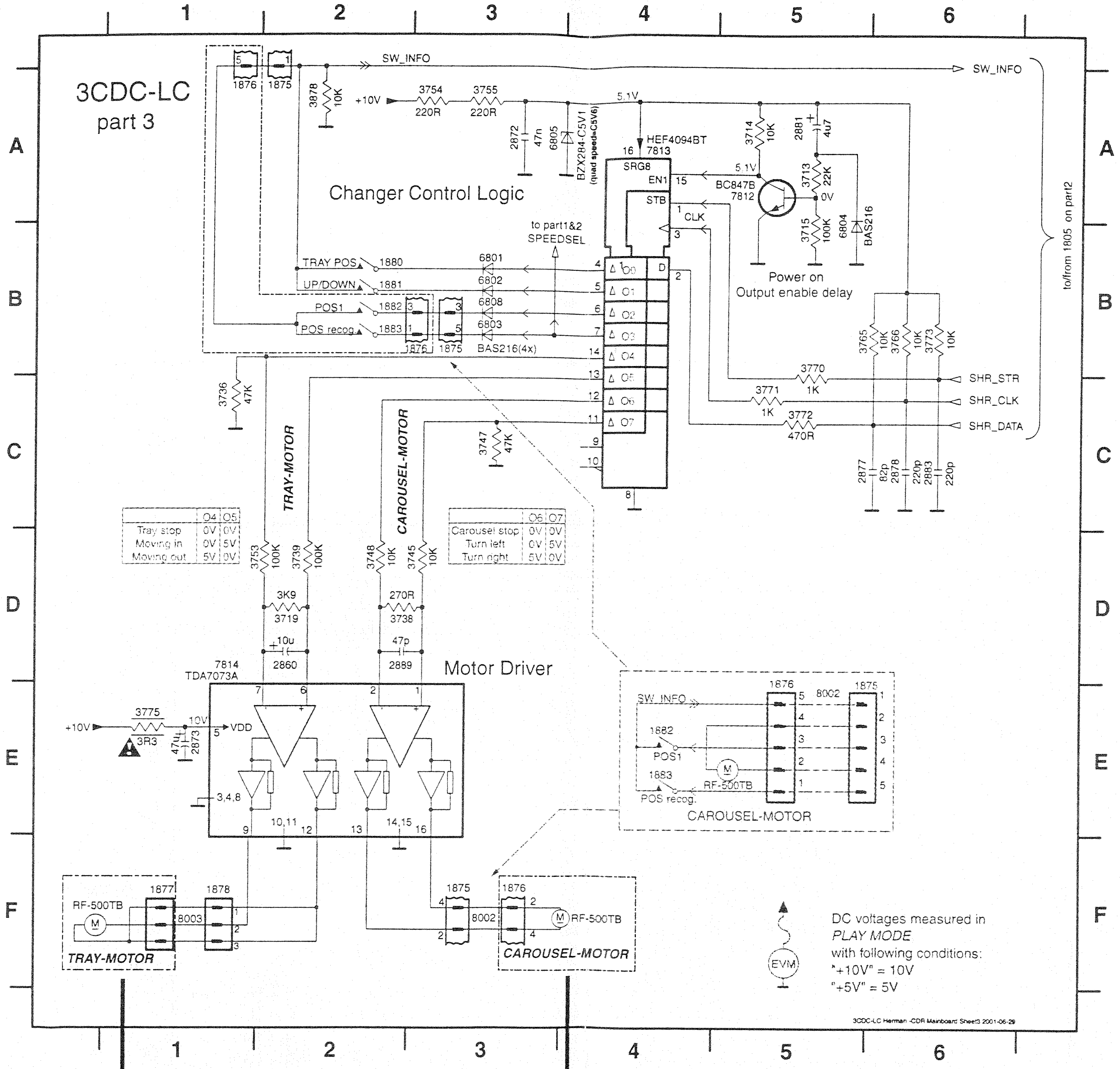
3CDC-LC-CDR (Herman) Layout stage .6 2001-07-26

1802	C14
1803	G14
1810	B6
2813	A3
2816	D7
2818	C7
2820	G5
2822	A3
2823	B3
2824	B3
2825	A3
2826	D3
2829	G5
2833	B6
2834	B6
2837	B4
2838	A4
2843	C7
2845	C7
3709	A3
3712	G2
3716	F2
3717	G2
3759	F2
3767	E11
3769	F11
3804	F7
3809	B2
3810	G5
3812	F5
3813	F5
3814	F4
3819	G5
3823	A4
3826	B3
3827	B4
3828	B3
3832	G6
3849	F6
3851	A3
3853	A4
3855	D2
3858	G4
3859	G4
3860	G4
3861	G4
3862	B7
3864	A4
3865	D7
3867	A4
6807	F11
6811	G11
6812	B2
7802	A3
7802	C5
7815	F11


3CDC-LC
part 2
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
VrefCD10
3853
470R
3823
1K
2838
10u
SPEEDSEL
from part3
(7813/7)
3851
47K
7805
BC847B
2825
6n8
for quad speed only
for 2x: 2813 = 10n
EYE-PATTERN
800mVpp
TB = 0.5us/div
HF
3709
1K
2822
1n8
for double speed only
2813
3n3
22K
3826
+3.3V
3864
100R
3867
22K
2837
4u7
3827
27K
2824
47n
for 4x: 2823 = 22p
2823
47p
PHOTO DIODES
CD DRIVE on PART1
D1
D2
D3
D4
R1
R2
2834
33p
2833
33p
1810
AT-49
PORE
6812
BAS316
10K
3809
22K
3828
3862
120R
2843
100n
LDON
Innersw
from part1 1801
EQSEL
to part1 7804/C
RW/DA
to part1 7801/pin11
TO SERVO/MOTOR DRIVER
on PART1
M1
SL
FO
RA
3855
15R
2826
47u
+3servo
DOBM
Signal Processor
SAA7324/SAA7325
7802
HFREF
HFIN
ISLICE
VSSA1
VDDA1
IREF
VRIN
VSSA2
CROUT
CRIN
VDDA2
VREF GEN
ANALOG / DIGITAL
CONVERTER
TIMING
FRONTEND
VERSATILE
INTERFACE
PRE-
PROCESSING
CONTROL
FUNCTION
BITSTREAM DAC
MOTOR
CONTROL
DIG.
PLL
EFM
DEMOD
ADDR
SRAM
AUDIO
PROCESSOR
OUTPUT
STAGES
ERROR
CORR.
EBU
INTERF.
PEAK
DET.
SUBCODE
PROCESSOR
MICROCONTROLLER
INTERFACE
SERIAL DATA
LOOPBACK
INTERFACE
SER. DATA
INTERFACE
KILL
VERSAT.
INTERF.
LDON
V1
V5
V4
MOTO2
MOTO1
VSSD3
VDDD2C
SL
FO
RA
CFLG
VDDD1P
DOEM
VSSD2
CL11|4
SBSY
SFSY
SUB
RCK
TEST3
STATUS
SILD
RAB
SCL
SDA
RESET
SCLI
SDI
WCLI
V2|V3
VSSD1
KILL
LN
LP
VNEG
VPOS
RN
RP
SELPLL
TEST1
CL16
DATA
WCLK
SCLK
EF
TEST2
1.7V
0.8V
1.6V
3.2V
3V
3.4V
1n5
2818
0u47
2845
2816
3865
120R
3759
470R
3716
100R
3717
1R
3712
10R
EBU
PORE
to 6812
3814
470R
3813
470R
3812
470R
3858
3859
3860
3861
10K (4x)
2829
27p
2820
1n
3810
470R
3819
470R
3832
10K
3804
10K
3849
10K
SILD
RAB
SICL
SDA
PORE
* marked components only forseen
EBU = DIGITAL AUDIO
PORE
SILD
RAB
SICL
SDA
to CDR Module
1802
EBU_GND
EBU
CD10_RESET
SILD
RAB
SICL
SDA
GND
FMN-STRK
voltage stab.
3767
33R
7815
BC847B
3.3V
4.1V
3769
100R
6807
BZX284
C3V9
+5V
+10V
6811
1N4003
1805
Not Connected
+5V
GND
+10V
SW_INFO
SHR_STR
SHR_CL
SHR_DATA
Not Connected
FE-ST-VK-N
communication with
Shift Register
on part 3
communication with
Front microprocessor
...V DC voltages measured in
PLAY MODE
with following conditions:
"+10V" = 10V
"+5V" = 5V
EVM
3CDC-LC Herman Mainboard Sheet2 2001-06-29 (CDR Version)

1875	F3	1876	B3	1880	B2	1883	E4	2878	C6	3714	A5	3739	D2	3754	A3	3771	C5	6801	B3	6808	B3
1875	E5	1876	F3	1881	B2	2860	D2	2881	A5	3715	B5	3745	D3	3755	A3	3772	C5	6802	B3	7812	A5
1875	B3	1876	E5	1882	B2	2872	A3	2883	C6	3719	D2	3747	C3	3765	B6	3773	B6	6803	B3	7813	A4
1875	A2	1877	F1	1882	E4	2873	E1	2889	D2	3736	C1	3748	D2	3766	B6	3775	E1	6804	B5	7814	E1
1876	A1	1878	F1	1883	B2	2877	C6	3713	A5	3738	D2	3753	D2	3770	C5	3878	A2	6805	A4	8002	E5

8003 F1

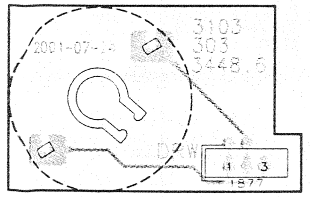

1
2
3
4
5
6
A
B
C
D
E
F
3CDC-LC
part 3
Changer Control Logic
SW_INFO
1876
1875
3878
10K
+10V
3754
220R
3755
220R
5.1V
2872
47n
6805
BZX284-C5V1
(quad speed=C5V6)
HEF4094BT
7813
16
SRG8
EN1
15
STB
1
CLK
3
D
2
to part1&2
SPEEDSEL
TRAY POS
1880
UP/DOWN
1881
POS1
1882
POS recog.
1883
6801
6802
6808
6803
BAS216(4x)
O0
O1
O2
O3
O4
O5
O6
O7
4
5
6
7
14
13
12
11
9
10
8
3714
10K
2881
4u7
5.1V
BC847B
7812
3713
22K
0V
3715
100K
6804
BAS216
Power on
Output enable delay
3765
10K
3766
10K
3773
10K
3770
1K
3771
1K
3772
470R
SHR_STR
SHR_CLK
SHR_DATA
to/from 1805 on part2
2877
82p
2878
220p
2883
220p
3736
47K
3747
47K
TRAY-MOTOR
CAROUSEL-MOTOR
3753
100K
3739
100K
3748
10K
3745
10K
3K9
3719
270R
3738
10u
2860
47p
2889
Motor Driver
7814
TDA7073A
+10V
3775
3R3
10V
47u
2873
5
VDD
3,4,8
9
10,11
12
13
14,15
16
RF-500TB
1877
1878
8003
TRAY-MOTOR
1875
1876
8002
RF-500TB
CAROUSEL-MOTOR
SW_INFO
1876
8002
1875
1882
POS1
1883
POS recog.
RF-500TB
CAROUSEL-MOTOR
EVM
3CDC-LC Herman -CDR Mainboard Sheet3 2001-06-29

	O4	O5
Tray stop	0V	0V
Moving in	0V	5V
Moving out	5V	0V

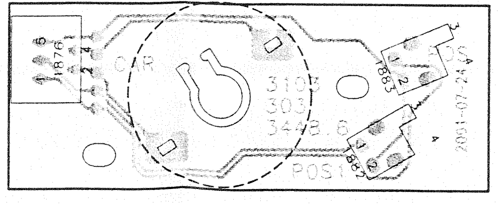
	O6	O7
Carousel stop	0V	0V
Turn left	0V	5V
Turn right	5V	0V

DC voltages measured in
PLAY MODE
with following conditions:
"+10V" = 10V
"+5V" = 5V

Drawer Motor

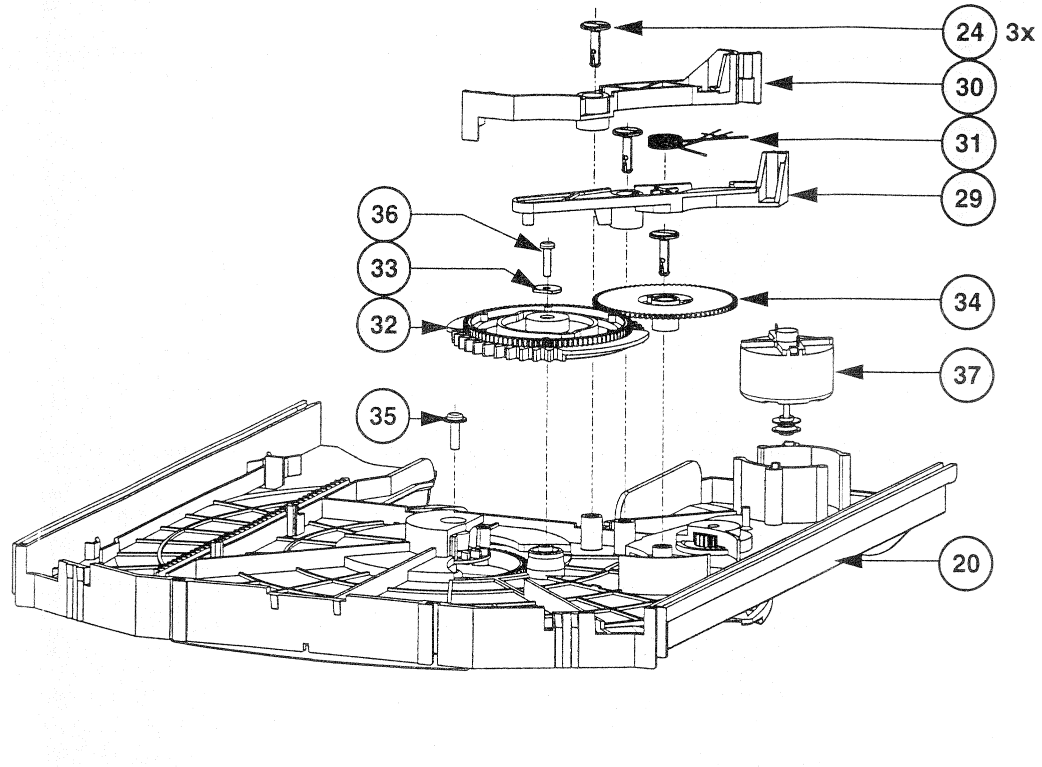

2001-07-24
3103
303
3448.6
DRW
1
3
1877

Carrousel Motor

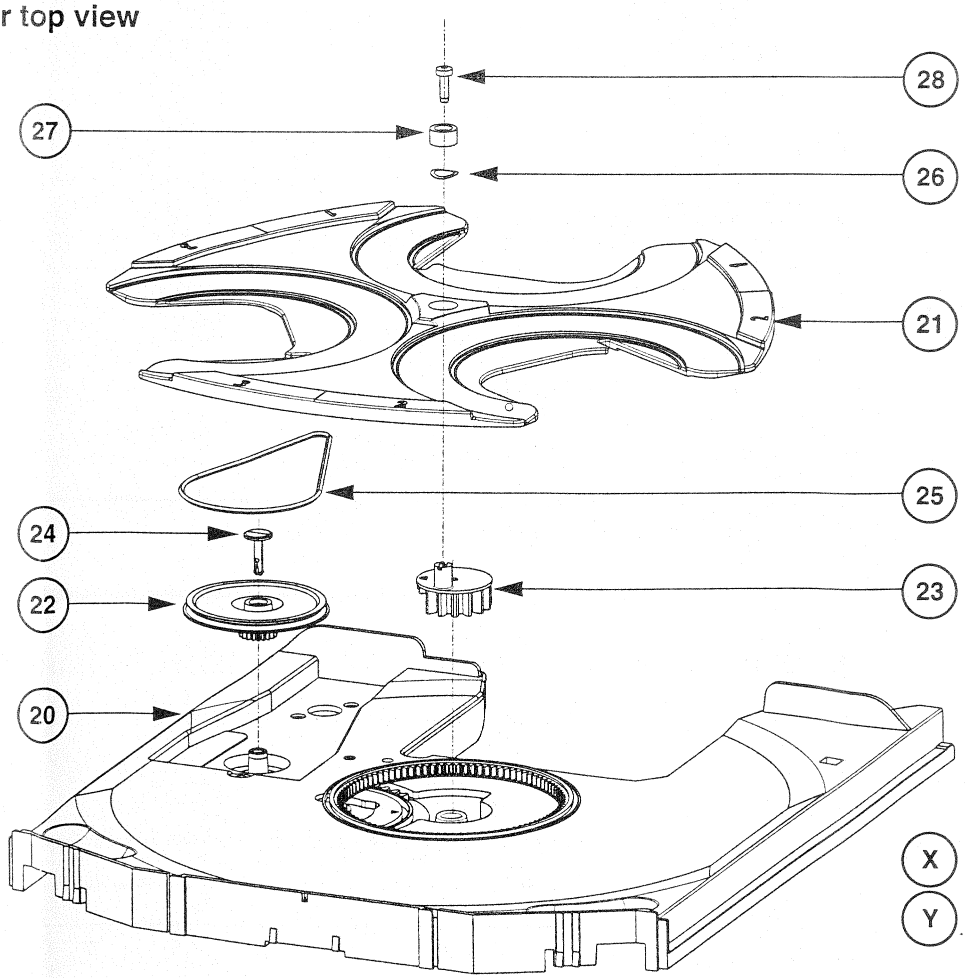

5
1876
1
CAR
3103
303
3448.6
1883
POS
2001-07-24
1882
POS1

EXPLODED VIEW (Drawer)

Drawer bottom view


24
3x
30
31
29
36
33
34
32
37
35
20

Drawer top view


28
27
26
21
25
24
22
23
20

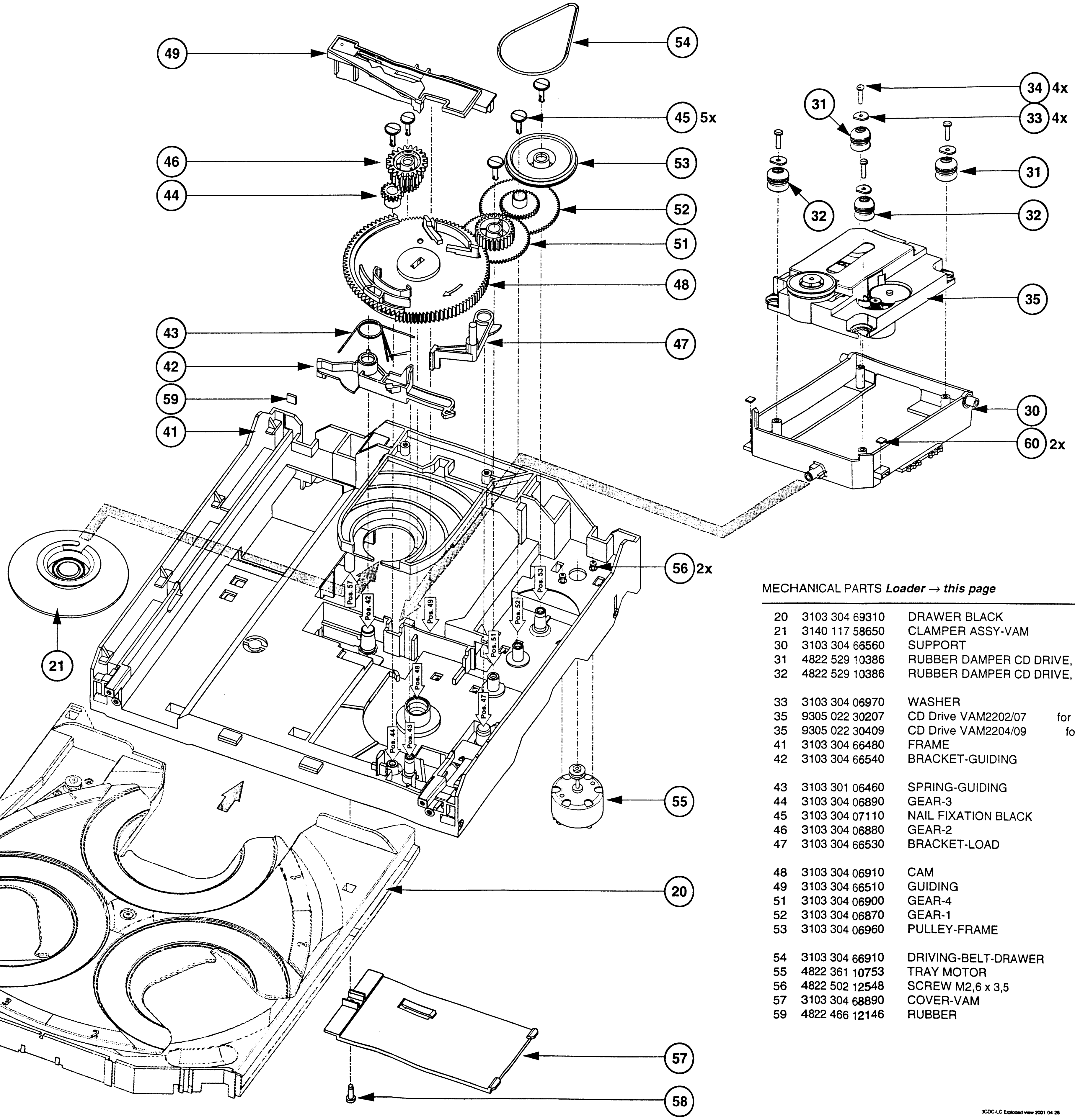
X spare part
Y non spare part

3CDC-LC Drawer assy 1999 09 13

EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS *Drawer → Chapter 10-10*

20	3103 304 69310	DRAWER BLACK
21	3103 304 69320	CAROUSEL BLACK
22	3103 304 07120	PULLEY DRAWER BLACK
23	3103 304 06850	ECCENTRIC GEAR WHEEL
24	3103 304 07110	NAIL FIXATION BLACK
25	3103 304 66850	DRIVING BELT CAROUSEL
27	4822 532 12365	BUSH DRAWER (height=5,5mm, d=9,4mm)
29	3103 304 66550	BRACKET-DISC
30	3103 304 66520	TUMBLER
31	3103 301 06470	SPRING-DISC
32	3103 304 06920	CONTROL-DISC
34	3103 304 06870	GEAR-1
37	4822 361 10753	CAROUSEL MOTOR



MECHANICAL PARTS *Loader → this page*

20	3103 304 69310	DRAWER BLACK	
21	3140 117 58650	CLAMPER ASSY-VAM	
30	3103 304 66560	SUPPORT	
31	4822 529 10386	RUBBER DAMPER CD DRIVE, REAR	
32	4822 529 10386	RUBBER DAMPER CD DRIVE, FRONT	
33	3103 304 06970	WASHER	
35	9305 022 30207	CD Drive VAM2202/07	for Double speed
35	9305 022 30409	CD Drive VAM2204/09	for Quad speed
41	3103 304 66480	FRAME	
42	3103 304 66540	BRACKET-GUIDING	
43	3103 301 06460	SPRING-GUIDING	
44	3103 304 06890	GEAR-3	
45	3103 304 07110	NAIL FIXATION BLACK	
46	3103 304 06880	GEAR-2	
47	3103 304 66530	BRACKET-LOAD	
48	3103 304 06910	CAM	
49	3103 304 66510	GUIDING	
51	3103 304 06900	GEAR-4	
52	3103 304 06870	GEAR-1	
53	3103 304 06960	PULLEY-FRAME	
54	3103 304 66910	DRIVING-BELT-DRAWER	
55	4822 361 10753	TRAY MOTOR	
56	4822 502 12548	SCREW M2,6 x 3,5	
57	3103 304 68890	COVER-VAM	
59	4822 466 12146	RUBBER	

Ⓧ spare part

Ⓨ non spare part

3CDC-LC Exploded view 2001 04 26

ELECTRICAL PARTSLIST 3CDC-LC-CDR MODULE

MISCELLANEOUS

35	9305 022 30207	CD Drive VAM2202/07	for Double speed
35	9305 022 30409	CD Drive VAM2204/09	for Quad speed
37	4822 361 10753	CAROUSEL MOTOR	
55	4822 361 10753	TRAY MOTOR	
1800	4822 265 10925	FLEX FOIL CONNECTOR 15P	
1802	2422 025 16833	FLEX FOIL CONNECTOR 8P	
1805	4822 265 11531	FLEX FOIL CONNECTOR 9P	
1875	4822 267 10958	FLEX FOIL CONNECTOR 5P	
1876	2422 025 08332	FLEX FOIL CONNECTOR 5P	
1880	4822 276 13503	SWITCH, Tray position	
1881	4822 276 13503	SWITCH, Drive up/down	
1882	4822 276 13503	SWITCH, Position1 recognized	
1883	4822 276 13503	SWITCH, valid position recognized	
8002	3103 308 91990	FLEX FOIL CABLE 5P, 200mm (1:1)	
8005	3103 308 91980	FLEX FOIL CABLE 15P, 170mm (1:1)	
8007	3139 110 53540	FLEX FOIL CABLE 8P,340mm (1:1)	

CAPACITORS

2800 ©	4822 126 10326	180pF	5%	50V
2801 ©	4822 126 13883	220pF	5%	50V
2802 ©	4822 126 14508	180pF	5%	50V
2803 ©	4822 126 13883	220pF	5%	50V
2804 ©	4822 126 13193	4,7nF	10%	63V
2805 ©	4822 126 13883	220pF	5%	50V
2806 ©	4822 126 13883	220pF	5%	50V
2807 ©	5322 122 31863	330pF	5%	50V
2808 ©	4822 126 13883	220pF	5%	50V
2809 ©	4822 126 13879	220nF	20%	16V
2810 ©	4822 126 10326	180pF	5%	50V
2811 ©	4822 126 13883	220pF	5%	50V
2812 ©	3198 017 34730	47nF	10%	16V
2813 ©	4822 122 33177	10nF	20%	50V
2813 ©	4822 122 33891	3,3nF	10%	63V
2814 ©	4822 122 33216	270pF	5%	50V
2815 ©	4822 126 14076	220nF	20%	25V
2816 ©	4822 126 13344	1,5nF	5%	63V
2817	4822 124 40769	4,7µF	20%	100V
2818 ©	4822 126 13344	1,5nF	5%	63V
2819	4822 124 40769	4,7µF	20%	100V
2820 ©	5322 126 11578	1nF	10%	63V
2822 ©	2238 861 15182	1,8nF	5%	50V
2823 ©	4822 122 33777	47pF	5%	63V
2823 ©	5322 122 32658	22pF	5%	50V
2824 ©	4822 126 13751	47nF	10%	50V
2825 ©	5322 122 31866	6,8nF	10%	63V
2826	4822 124 12362	47µF	20%	4V
2827 ©	5322 122 34099	470pF	10%	63V
2828	4822 124 12362	47µF	20%	4V
2829 ©	4822 126 11669	27pF	10%	50V
2831 ©	4822 126 13751	47nF	10%	50V
2833 ©	2222 867 15339	33pF	5%	50V
2834 ©	2222 867 15339	33pF	5%	50V
2835 ©	3198 017 34730	47nF	10%	16V
2836	4822 124 40769	4,7µF	20%	100V
2837	4822 124 22726	4,7µF	20%	35V
2839	4822 124 40433	47µF	20%	25V
2840 ©	4822 126 13751	47nF	10%	50V
2841 ©	4822 122 33575	220pF	5%	50V
2842 ©	4822 126 13883	220pF	5%	50V
2843 ©	4822 126 14585	100nF	10%	50V
2844 ©	5322 126 10794	220pF	10%	50V
2845	5322 124 41948	0,47µF	20%	50V
2848 ©	4822 126 14585	100nF	10%	50V
2849 ©	4822 126 14585	100nF	10%	50V
2850 ©	5322 122 32268	470pF	10%	50V
2859 ©	4822 126 13956	68pF	5%	63V

CAPACITORS

2860	4822 124 11947	10µF	20%	16V
2866 ©	4822 126 13751	47nF	10%	50V
2872 ©	3198 017 34730	47nF	10%	16V
2873	4822 124 80231	47µF	20%	16V
2877 ©	4822 126 14226	82pF		50V
2878 ©	4822 126 13883	220pF	5%	50V
2881	4822 124 40769	4,7µF	20%	100V
2883 ©	4822 126 13883	220pF	5%	50V
2884 ©	5322 122 33861	120pF	5%	NP0
2885 ©	4822 126 14043	1µF	20%	16V
2886 ©	4822 122 33177	10nF	20%	50V
2887 ©	5322 126 10511	1nF	5%	50V
2889 ©	4822 122 33777	47pF	5%	63V

RESISTORS

2822 ©	4822 051 20008	CHIP JUMPER 0805		
3700 ©	4822 117 12925	47kΩ	1%	0,06W
3702 ©	4822 117 12521	68Ω	1%	0,1W
3703 ©	4822 051 20332	3,3kΩ	5%	0,1W
3709 ©	4822 051 10102	1kΩ	2%	0,25W
3709 ©	4822 051 20008	CHIP JUMPER 0805		
3712 ©	4822 117 12917	1Ω	5%	0,06W
3713 ©	4822 051 30223	22kΩ	5%	0,06W
3714 ©	4822 051 30103	10kΩ	5%	0,06W
3715 ©	4822 117 13632	100kΩ	1%	0,06W
3716 ©	4822 051 30101	100Ω	5%	0,06W
3717 ©	4822 117 12917	1Ω	5%	0,06W
3719 ©	4822 051 30392	3,9kΩ	5%	0,06W
3720 ©	4822 051 30562	5,6kΩ	5%	0,06W
3721 ©	4822 051 30223	22kΩ	5%	0,06W
3722 ©	4822 051 30392	3,9kΩ	5%	0,06W
3724 ©	4822 117 12955	2,7kΩ	1%	0,1W
3725 ©	4822 117 13577	330Ω	1%	0,1W
3726 ©	4822 051 30271	270Ω	5%	0,06W
3727 ©	4822 051 30102	1kΩ	5%	0,06W
3728 ©	4822 051 30102	1kΩ	5%	0,06W
3729 ©	4822 117 11817	1,2kΩ	1%	0,06W
3730 ©	4822 051 20333	33kΩ	5%	0,1W
3735 ©	4822 051 30223	22kΩ	5%	0,06W
3736 ©	4822 117 12925	47kΩ	1%	0,06W
3737 ©	4822 051 20334	330kΩ	5%	0,1W
3738 ©	4822 051 30271	270Ω	5%	0,06W
3739 ©	4822 117 13632	100kΩ	1%	0,06W
3745 ©	4822 117 10833	10kΩ	1%	0,1W
3747 ©	4822 117 12925	47kΩ	1%	0,06W
3748 ©	4822 051 30103	10kΩ	5%	0,06W
3749 ©	4822 117 12521	68Ω	1%	0,1W
3752 ©	4822 117 12521	68Ω	1%	0,1W
3753 ©	4822 117 13632	100kΩ	1%	0,06W
3754 ©	4822 117 11503	220Ω	5%	0,1W
3755 ©	4822 117 11503	220Ω	5%	0,1W
3759 ©	4822 051 20471	470Ω	5%	0,1W
3765 ©	4822 051 30103	10kΩ	5%	0,06W
3766 ©	4822 117 10833	10kΩ	1%	0,1W
3767 ©	4822 051 30339	33Ω	5%	0,06W
3768 ©	4822 051 20334	330kΩ	5%	0,1W
3769 ©	4822 051 30101	100Ω	5%	0,06W
3770 ©	4822 051 30102	1kΩ	5%	0,06W
3771 ©	4822 051 30102	1kΩ	5%	0,06W
3772 ©	4822 051 30471	470Ω	5%	0,06W
3773 ©	4822 117 10833	10kΩ	1%	0,1W
3775 ▲	4822 052 10338	3,3Ω		NFR25
3776 ©	4822 051 30103	10kΩ	5%	0,06W
3777 ©	4822 051 30393	39kΩ	5%	0,06W
3778 ©	4822 051 30223	22kΩ	5%	0,06W

ELECTRICAL PARTSLIST 3CDC-LC-CDR MODULE

RESISTORS

3779 ©	4822 117 11454	820Ω	1%	0,1W
3780 ©	4822 051 30471	470Ω	5%	0,06W
3781 ©	4822 051 30561	560Ω	5%	0,06W
3782 ©	4822 051 30333	33kΩ	5%	0,06W
3800 ©	4822 051 30563	56kΩ	5%	0,06W
3801 ©	4822 051 30103	10kΩ	5%	0,06W
3802 ©	4822 117 11148	56kΩ	1%	0,1W
3803 ©	4822 117 10833	10kΩ	1%	0,1W
3805 ©	4822 051 30103	10kΩ	5%	0,06W
3806 ©	4822 051 30103	10kΩ	5%	0,06W
3807 ©	4822 051 30103	10kΩ	5%	0,06W
3808 ©	4822 051 30103	10kΩ	5%	0,06W
3809 ©	4822 051 30103	10kΩ	5%	0,06W
3810 ©	4822 051 30471	470Ω	5%	0,06W
3811 ©	4822 051 20273	27kΩ	5%	0,1W
3812 ©	4822 051 20471	470Ω	5%	0,1W
3813 ©	4822 051 20471	470Ω	5%	0,1W
3814 ©	4822 051 20471	470Ω	5%	0,1W
3815 ▲	4822 052 10478	4,7Ω	5%	NFR25
3819 ©	4822 051 20471	470Ω	5%	0,1W
3820 ©	4822 051 30472	4,7kΩ	5%	0,06W
3821 ©	4822 051 20472	4,7kΩ	5%	0,1W
3822 ©	4822 051 30272	2,7kΩ	5%	0,06W
3823 ©	4822 051 30102	1kΩ	5%	0,06W
3824 ©	4822 051 30102	1kΩ	5%	0,06W
3826 ©	4822 051 20223	22kΩ	5%	0,1W
3827 ©	4822 051 20273	27kΩ	5%	0,1W
3828 ©	4822 051 30223	22kΩ	5%	0,06W
3829 ©	4822 117 13608	4,7Ω	5%	0,06W
3830 ©	4822 116 83933	15kΩ	1%	0,1W
3831 ©	4822 117 10837	100kΩ	1%	0,1W
3832 ©	4822 117 10833	10kΩ	1%	0,1W
3833 ©	4822 051 30223	22kΩ	5%	0,06W
3834 ©	4822 051 20223	22kΩ	5%	0,1W
3835 ▲	2120 660 90046	0,27Ω	20%	PTC
3836 ©	4822 117 12889	270kΩ	1%	0,06W
3837 ©	4822 117 10833	10kΩ	1%	0,1W
3838 ©	4822 051 30103	10kΩ	5%	0,06W
3839 ©	4822 117 10834	47kΩ	1%	0,1W
3841 ©	4822 051 20273	27kΩ	5%	0,1W
3842 ©	4822 117 10834	47kΩ	1%	0,1W
3843 ©	4822 117 10834	47kΩ	1%	0,1W
3844 ©	4822 117 12864	82kΩ	5%	0,6W
3845 ©	4822 117 10834	47kΩ	1%	0,1W
3846 ©	4822 117 10834	47kΩ	1%	0,1W
3847 ©	4822 117 11148	56kΩ	1%	0,1W
3848 ©	4822 117 10837	100kΩ	1%	0,1W
3849 ©	4822 051 30103	10kΩ	5%	0,06W
3850 ©	4822 051 30183	18kΩ	5%	0,06W
3851 ©	4822 117 10834	47kΩ	1%	0,1W
3852 ©	4822 051 10102	1kΩ	2%	0,25W
3853 ©	4822 051 20471	470Ω	5%	0,1W
3854 ©	4822 051 30101	100Ω	5%	0,06W
3855 ©	4822 117 12971	15Ω	5%	0,06W
3856 ©	4822 117 12521	68Ω	1%	0,1W
3857 ©	4822 117 12521	68Ω	1%	0,1W
3861 ©	4822 051 30103	10kΩ	5%	0,06W
3862 ©	4822 051 20121	120Ω	5%	0,1W
3863 ©	4822 051 30339	33Ω	5%	0,06W
3864 ©	4822 051 30101	100Ω	5%	0,06W
3865 ©	4822 051 30121	120Ω	5%	0,06W
3866 ©	4822 051 30103	10kΩ	5%	0,06W
3871 ©	4822 117 11149	82kΩ	1%	0,1W
3872 ©	4822 051 20472	4,7kΩ	5%	0,1W
3873 ©	4822 051 20008	CHIP JUMPER 0805		

RESISTORS

3874 ©	4822 051 20008	CHIP JUMPER 0805		
3878 ©	4822 117 11503	220Ω	5%	0,1W
3881 ©	4822 117 11503	220Ω	5%	0,1W
4706 ©	4822 051 20008	CHIP JUMPER 0805		
4709 ©	4822 051 20008	CHIP JUMPER 0805		
4710 ©	4822 051 20008	CHIP JUMPER 0805		
4711 ©	4822 051 20008	CHIP JUMPER 0805		
4724 ©	4822 051 20008	CHIP JUMPER 0805		
4726 ©	4822 051 20008	CHIP JUMPER 0805		
4729 ©	4822 051 20008	CHIP JUMPER 0805		
4730 ©	4822 051 20008	CHIP JUMPER 0805		
4731 ©	4822 051 30008	CHIP JUMPER 0603		
4732 ©	4822 051 20008	CHIP JUMPER 0805		
4733 ©	4822 051 30008	CHIP JUMPER 0603		
4736 ©	4822 051 30008	CHIP JUMPER 0603		
4738 ©	4822 051 30008	CHIP JUMPER 0603		
4739 ©	4822 051 30008	CHIP JUMPER 0603		
4740 ©	4822 051 30008	CHIP JUMPER 0603		
4743 ©	4822 051 20008	CHIP JUMPER 0805		
4744 ©	4822 051 30008	CHIP JUMPER 0603		
4747 ©	4822 051 20008	CHIP JUMPER 0805		
4748 ©	4822 051 20008	CHIP JUMPER 0805		
4749 ©	4822 051 30008	CHIP JUMPER 0603		
4800 ©	4822 051 30008	CHIP JUMPER 0603		
4801 ©	4822 051 30008	CHIP JUMPER 0603		
4802 ©	4822 051 30008	CHIP JUMPER 0603		
4803 ©	4822 051 30008	CHIP JUMPER 0603		
4805 ©	4822 051 30008	CHIP JUMPER 0603		
4806 ©	4822 051 20008	CHIP JUMPER 0805		
4810 ©	4822 051 20008	CHIP JUMPER 0805		
4811 ©	4822 051 20008	CHIP JUMPER 0805		
4812 ©	4822 051 20008	CHIP JUMPER 0805		
4813 ©	4822 051 20008	CHIP JUMPER 0805		
4814 ©	4822 051 20008	CHIP JUMPER 0805		
4815 ©	4822 051 20008	CHIP JUMPER 0805		
4820 ©	4822 051 20008	CHIP JUMPER 0805		
4821 ©	4822 051 20008	CHIP JUMPER 0805		
4822 ©	4822 051 20008	CHIP JUMPER 0805		
4823 ©	4822 051 30008	CHIP JUMPER 0603		
4826 ©	4822 051 20008	CHIP JUMPER 0805		
4827 ©	4822 051 30008	CHIP JUMPER 0603		
4828 ©	4822 051 30008	CHIP JUMPER 0603		
4829 ©	4822 051 20008	CHIP JUMPER 0805		
4830 ©	4822 051 20008	CHIP JUMPER 0805		
4831 ©	4822 051 20008	CHIP JUMPER 0805		
4832 ©	4822 051 30008	CHIP JUMPER 0603		
4833 ©	4822 051 20008	CHIP JUMPER 0805		
4834 ©	4822 051 20008	CHIP JUMPER 0805		
4835 ©	4822 051 20008	CHIP JUMPER 0805		
4836 ©	4822 051 20008	CHIP JUMPER 0805		
4837 ©	4822 051 20008	CHIP JUMPER 0805		
4838 ©	4822 051 30008	CHIP JUMPER 0603		
4839 ©	4822 051 20008	CHIP JUMPER 0805		
4840 ©	4822 051 20008	CHIP JUMPER 0805		
4841 ©	4822 051 20008	CHIP JUMPER 0805		
4842 ©	4822 051 20008	CHIP JUMPER 0805		
4843 ©	4822 051 20008	CHIP JUMPER 0805		
4844 ©	4822 051 20008	CHIP JUMPER 0805		
4845 ©	4822 051 20008	CHIP JUMPER 0805		
4846 ©	4822 051 20008	CHIP JUMPER 0805		
4847 ©	4822 051 20008	CHIP JUMPER 0805		
4848 ©	4822 051 20008	CHIP JUMPER 0805		
4849 ©	4822 051 30008	CHIP JUMPER 0603		
4850 ©	4822 051 20008	CHIP JUMPER 0805		
4852 ©	4822 051 20008	CHIP JUMPER 0805		

ELECTRICAL PARTSLIST 3CDC-LC-CDR MODULE

RESISTORS

4853©	4822 051 20008	CHIP JUMPER 0805
4854©	4822 051 30008	CHIP JUMPER 0603
4855©	4822 051 20008	CHIP JUMPER 0805
4856©	4822 051 20008	CHIP JUMPER 0805
4857©	4822 051 30008	CHIP JUMPER 0603
4858©	4822 051 20008	CHIP JUMPER 0805
4859©	4822 051 20008	CHIP JUMPER 0805
4861©	4822 051 20008	CHIP JUMPER 0805
4862©	4822 051 20008	CHIP JUMPER 0805
4863©	4822 051 20008	CHIP JUMPER 0805
4864©	4822 051 20008	CHIP JUMPER 0805
4865©	4822 051 30008	CHIP JUMPER 0603
4866©	4822 051 20008	CHIP JUMPER 0805
4867©	4822 051 30008	CHIP JUMPER 0603
4869©	4822 051 20008	CHIP JUMPER 0805
4870©	4822 051 20008	CHIP JUMPER 0805
4871©	4822 051 20008	CHIP JUMPER 0805
4872©	4822 051 20008	CHIP JUMPER 0805
4873©	4822 051 20008	CHIP JUMPER 0805
4874©	4822 051 20008	CHIP JUMPER 0805
4875©	4822 051 20008	CHIP JUMPER 0805
4877©	4822 051 30008	CHIP JUMPER 0603
4880©	4822 051 20008	CHIP JUMPER 0805
4883©	4822 051 20008	CHIP JUMPER 0805
4884©	4822 051 20008	CHIP JUMPER 0805
4885©	4822 051 20008	CHIP JUMPER 0805
4887©	4822 051 30008	CHIP JUMPER 0603
4888©	4822 051 20008	CHIP JUMPER 0805
4890©	4822 051 20008	CHIP JUMPER 0805
4891©	4822 051 30008	CHIP JUMPER 0603
4893©	4822 051 20008	CHIP JUMPER 0805
4895©	4822 051 20008	CHIP JUMPER 0805
4896©	4822 051 20008	CHIP JUMPER 0805
4897©	4822 051 20008	CHIP JUMPER 0805
4898©	4822 051 20008	CHIP JUMPER 0805

COILS

1810	4822 242 10849	CRYSTAL 8,46MHz

DIODES

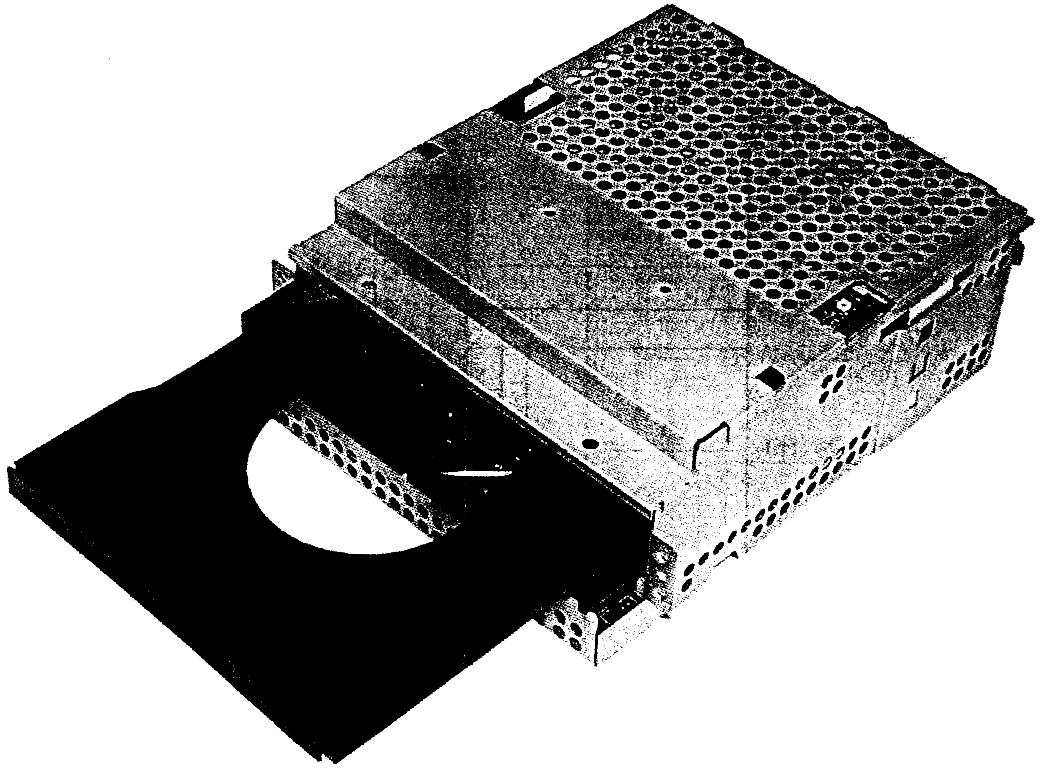
6801©	4822 130 83757	BAS216	
6802©	4822 130 83757	BAS216	
6803©	4822 130 83757	BAS216	
6804©	4822 130 83757	BAS216	
6805©	4822 130 10648	BZX284-C5V6	for Quad speed
6805©	4822 130 11383	BZX284-C5V1	for Double speed
6807©	4822 130 11366	BZX284-C3V9	
6808©	4822 130 83757	BAS216	
6810	4822 130 31878	1N4003G	
6811	4822 130 31878	1N4003G	
6812©	4822 130 11397	BAS316	

TRANSISTORS

7804©	4822 130 60511	BC847B
7805©	4822 130 60511	BC847B
7806©	4822 130 60511	BC847B
7812©	4822 130 60511	BC847B
7815©	4822 130 60511	BC847B
7817©	5322 130 42718	BFS20
7819©	4822 130 60511	BC847B
7820©	4822 130 60511	BC847B
7821©	5322 130 42718	BFS20
7822	4822 130 42131	BF550
7823©	5322 130 42718	BFS20
7824©	5322 130 42718	BFS20

INTEGRATED CIRCUITS

7801©	4822 209 17286	TZA1024T/N1, HF-AMPLIFIER
7802©	9352 684 20557	SAA7325H/T/M2B, SIGNAL PROCESSOR
7803©	9322 158 56682	M63000SP MOTOR DRIVER
7813©	5322 209 11306	HEF4094BT, SHIFT REGISTER
7814	4822 209 32852	TDA7073A/N2, MOTOR DRIVER



CDR 2001 Mozart Module

TABLE OF CONTENTS

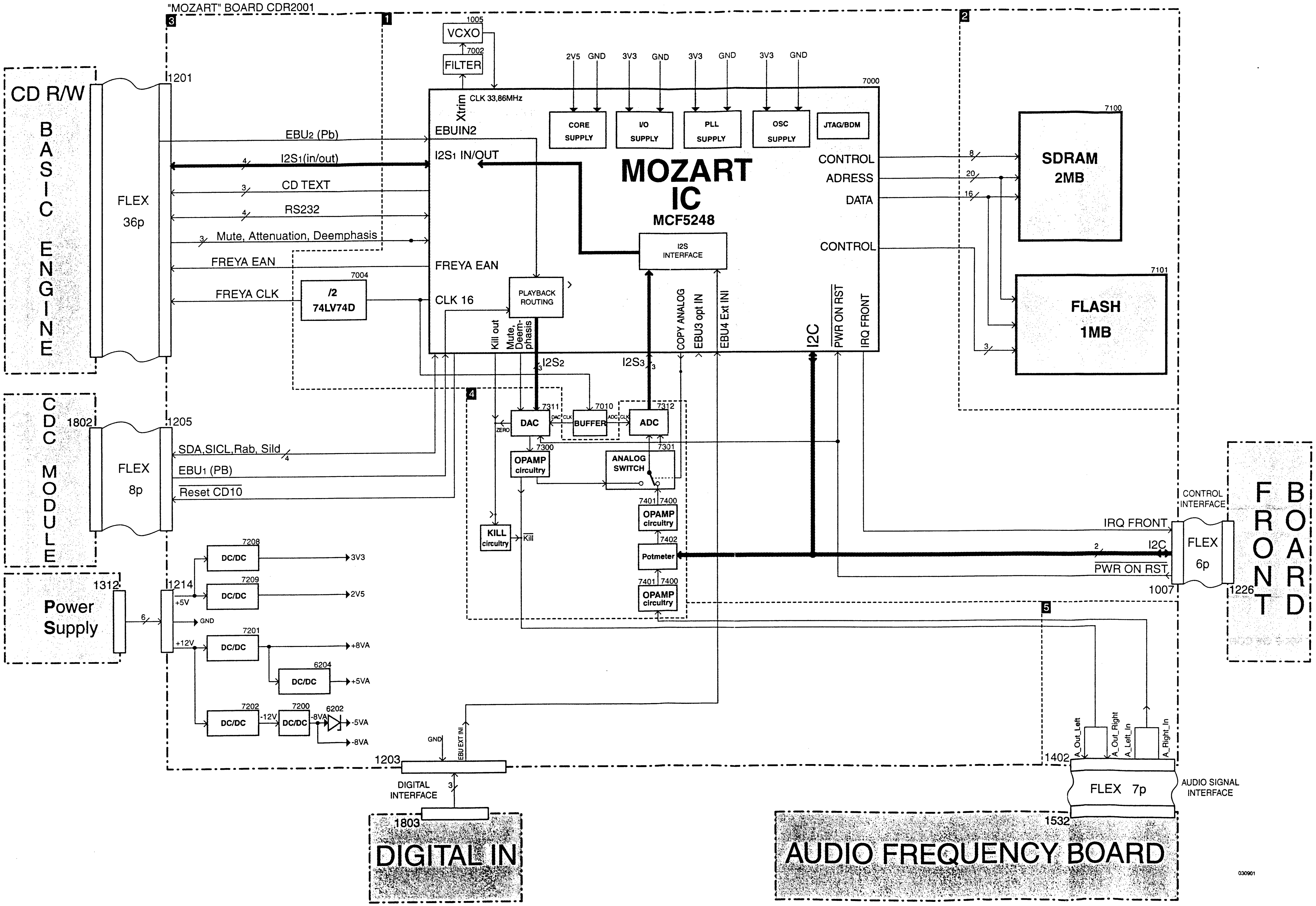
Service Hints 11-1
Block Diagram 11-2

SERVICE HINTS

- The CD-R/W module can only be repaired on component level with the help of COMPAIR.
  With this tool diagnosing of the set can be done in an interactive way. In the tool also the adjustment procedure has been implemented. The adjustment is absolutely necessary in case the CDR Main Board (new „MOZART“ Board) and/or CD drive (CDR Loader) is disconnected from the matched production combination.
  Only designated workshops can perform these repairs!
  Please send the complete set to the designated workshop.

Available circuit descriptions:	The Basics of Compact Disc Recordable/Rewritable 4822 725 25242
	3rd generation Compact Disc Recording . . . . .3104 125 40100 (with reference to description of the Basic Engine)
	2nd line Service Manual CDR Mozart Module 3122 785 60030

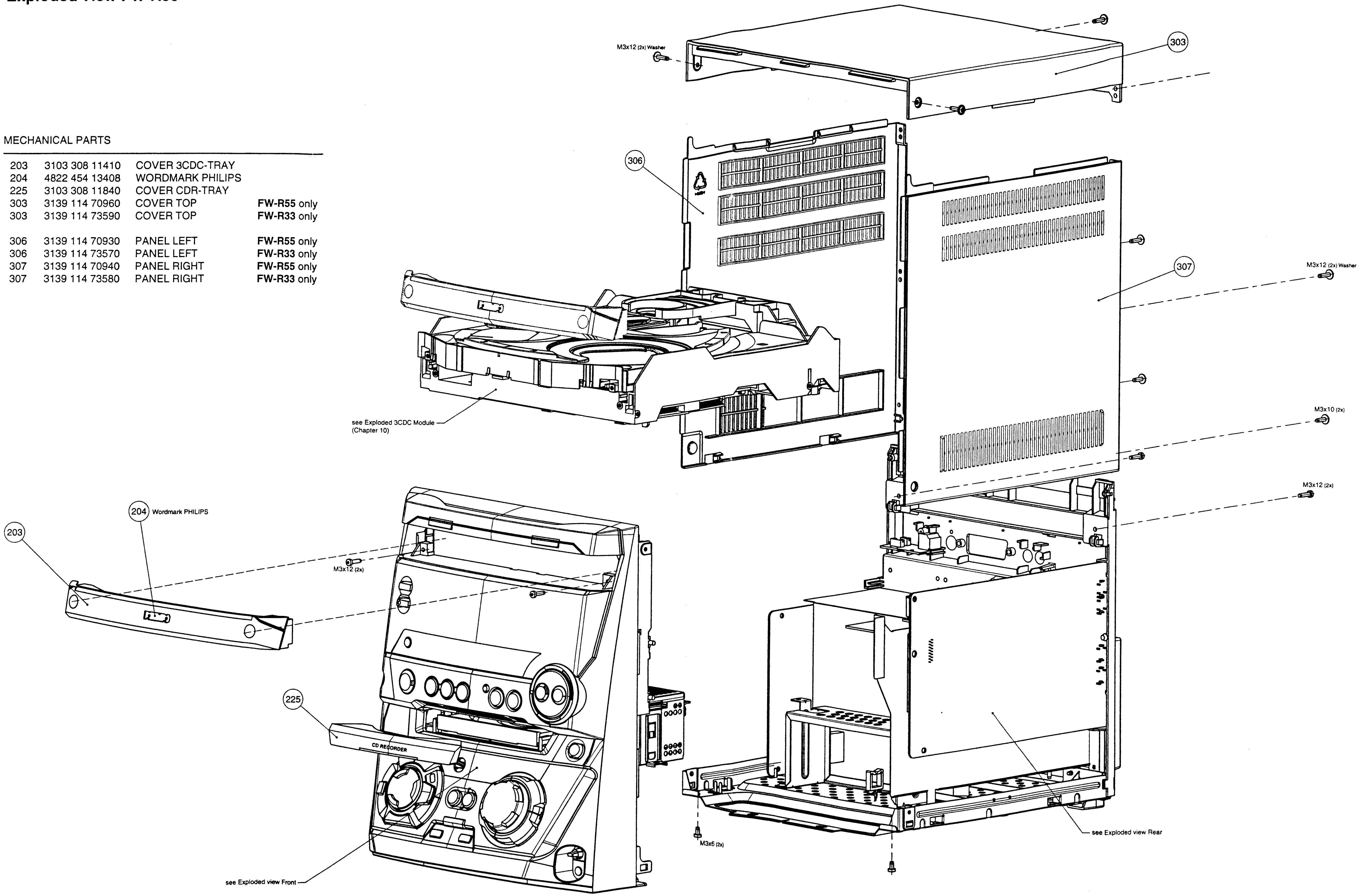
BLOCK DIAGRAM


"MOZART" BOARD CDR2001
3
1
2
4
5
CD R/W
BASIC ENGINE
FLEX
36p
1201
EBU2 (Pb)
I2S1(in/out)
CD TEXT
RS232
Mute, Attenuation, Deemphasis
FREYA EAN
FREYA CLK
7004
/2
74LV74D
1005
VCXO
7002
FILTER
Xtrim
CLK 33,86MHz
EBUIN2
I2S1 IN/OUT
FREYA EAN
CLK 16
2V5
GND
3V3
GND
3V3
GND
3V3
GND
7000
CORE SUPPLY
I/O SUPPLY
PLL SUPPLY
OSC SUPPLY
JTAG/BDM
MOZART IC
MCF5248
I2S INTERFACE
PLAYBACK ROUTING
Kill out
Mute, Deem-phasis
COPY ANALOG
EBU3 opt IN
EBU4 Ext INI
I2C
PWR ON RST
IRQ FRONT
CONTROL
ADRESS
DATA
CONTROL
8
20
16
3
7100
SDRAM
2MB
7101
FLASH
1MB
I2S2
I2S3
7311
DAC
ZERO
7010
BUFFER
7312
ADC
7300
OPAMP circuitry
7301
ANALOG SWITCH
7401 7400
OPAMP circuitry
7402
Potmeter
7401 7400
OPAMP circuitry
KILL circuitry
Kill
CDC MODULE
1802
FLEX
8p
1205
SDA,SICL,Rab, Sild
4
EBU1 (PB)
Reset CD10
Power Supply
1312
6
1214
+5V
GND
+12V
7208
DC/DC
3V3
7209
DC/DC
2V5
7201
DC/DC
+8VA
6204
DC/DC
+5VA
7202
DC/DC
-12V
7200
DC/DC
-8VA
6202
-5VA
-8VA
CONTROL INTERFACE
IRQ FRONT
I2C
2
PWR ON RST
FLEX
6p
1007
1226
FRONT BOARD
1203
GND
EBU EXT INI
DIGITAL INTERFACE
3
1803
DIGITAL IN
1402
A_Out_Left
A_Out_Right
A_Left_In
A_Right_In
FLEX 7p
AUDIO SIGNAL INTERFACE
1532
AUDIO FREQUENCY BOARD
030901

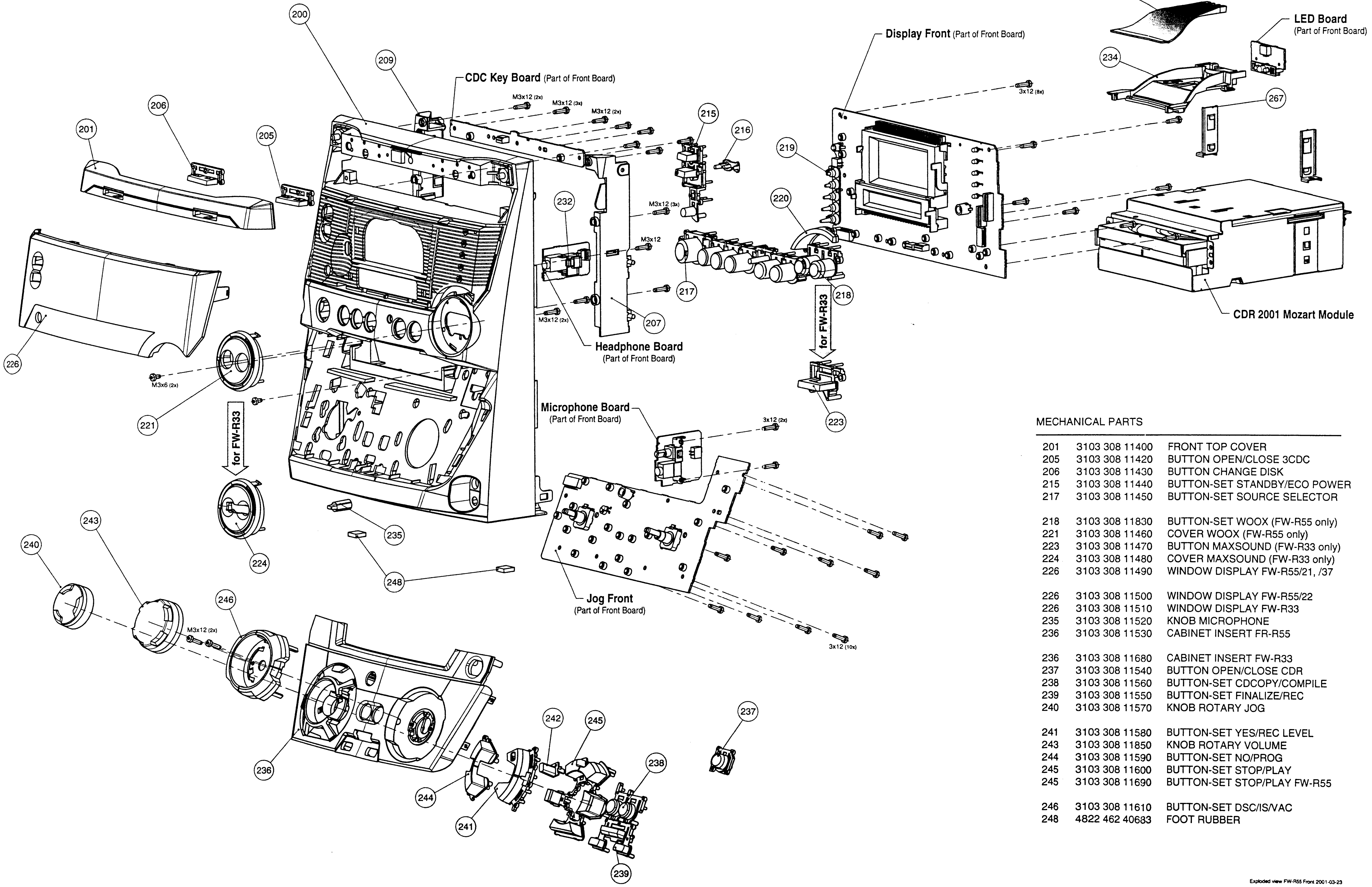
Exploded View FW-R55

MECHANICAL PARTS

203	3103 308 11410	COVER 3CDC-TRAY	
204	4822 454 13408	WORDMARK PHILIPS	
225	3103 308 11840	COVER CDR-TRAY	
303	3139 114 70960	COVER TOP	**FW-R55** only
303	3139 114 73590	COVER TOP	**FW-R33** only
306	3139 114 70930	PANEL LEFT	**FW-R55** only
306	3139 114 73570	PANEL LEFT	**FW-R33** only
307	3139 114 70940	PANEL RIGHT	**FW-R55** only
307	3139 114 73580	PANEL RIGHT	**FW-R33** only


M3x12 (2x) Washer
303
306
307
M3x12 (2x) Washer
see Exploded 3CDC Module (Chapter 10)
M3x10 (2x)
M3x12 (2x)
204 Wordmark PHILIPS
203
M3x12 (2x)
225
CD RECORDER
M3x6 (2x)
see Exploded view Rear
see Exploded view Front

Exploded View FW-R55 Front

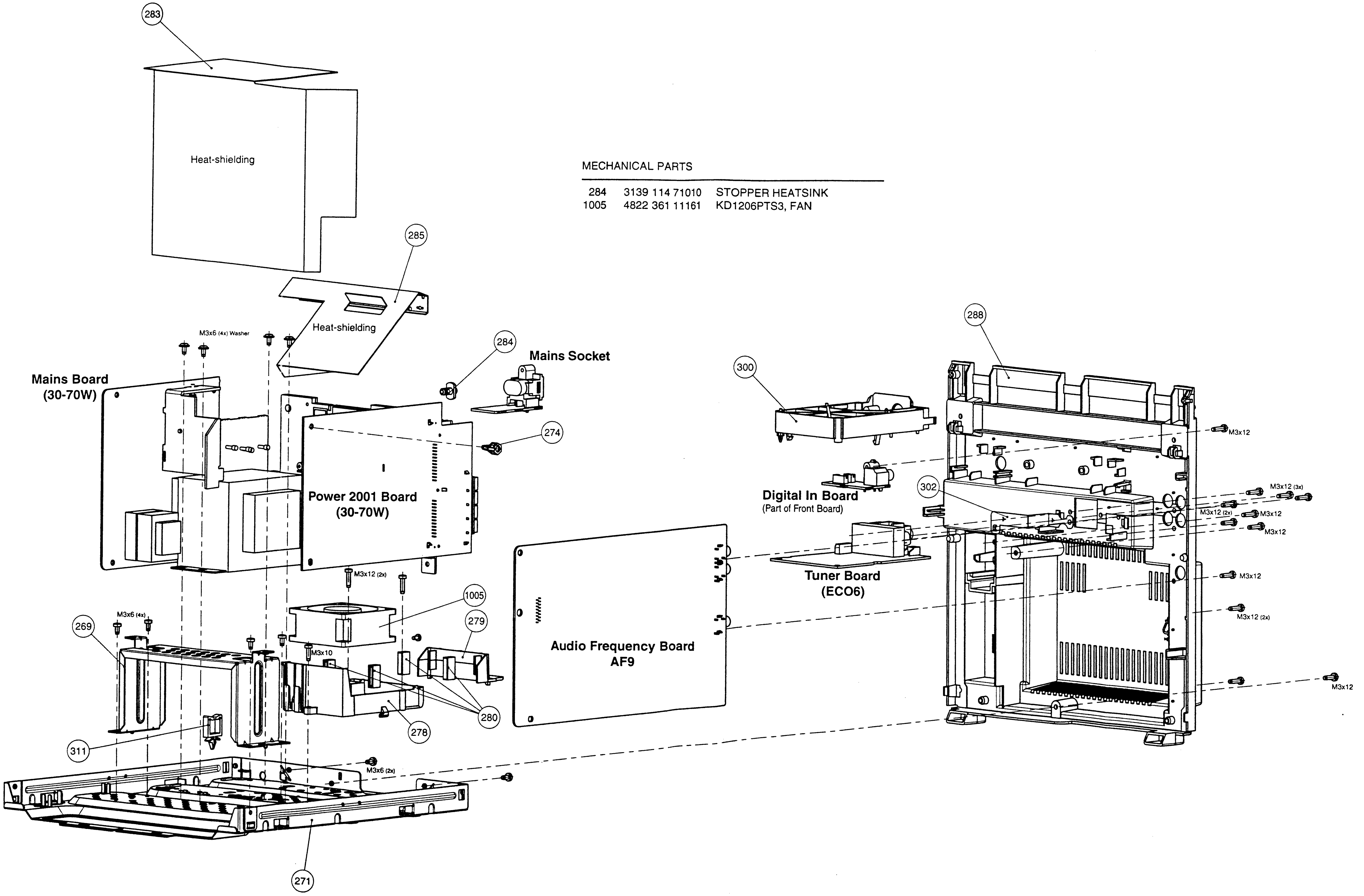

200
209
CDC Key Board (Part of Front Board)
M3x12 (2x)
M3x12 (3x)
M3x12 (2x)
206
201
205
215
216
219
Display Front (Part of Front Board)
3x12 (8x)
231
LED Board
(Part of Front Board)
234
267
220
232
M3x12 (3x)
M3x12
217
218
207
M3x12 (2x)
Headphone Board
(Part of Front Board)
for FW-R33
CDR 2001 Mozart Module
226
M3x6 (2x)
221
for FW-R33
Microphone Board
(Part of Front Board)
3x12 (2x)
223
224
235
248
243
240
246
M3x12 (2x)
Jog Front
(Part of Front Board)
3x12 (10x)
237
242
245
238
236
244
241
239

MECHANICAL PARTS

201	3103 308 11400	FRONT TOP COVER
205	3103 308 11420	BUTTON OPEN/CLOSE 3CDC
206	3103 308 11430	BUTTON CHANGE DISK
215	3103 308 11440	BUTTON-SET STANDBY/ECO POWER
217	3103 308 11450	BUTTON-SET SOURCE SELECTOR
218	3103 308 11830	BUTTON-SET WOOX (FW-R55 only)
221	3103 308 11460	COVER WOOX (FW-R55 only)
223	3103 308 11470	BUTTON MAXSOUND (FW-R33 only)
224	3103 308 11480	COVER MAXSOUND (FW-R33 only)
226	3103 308 11490	WINDOW DISPLAY FW-R55/21, /37
226	3103 308 11500	WINDOW DISPLAY FW-R55/22
226	3103 308 11510	WINDOW DISPLAY FW-R33
235	3103 308 11520	KNOB MICROPHONE
236	3103 308 11530	CABINET INSERT FR-R55
236	3103 308 11680	CABINET INSERT FW-R33
237	3103 308 11540	BUTTON OPEN/CLOSE CDR
238	3103 308 11560	BUTTON-SET CDCOPY/COMPILE
239	3103 308 11550	BUTTON-SET FINALIZE/REC
240	3103 308 11570	KNOB ROTARY JOG
241	3103 308 11580	BUTTON-SET YES/REC LEVEL
243	3103 308 11850	KNOB ROTARY VOLUME
244	3103 308 11590	BUTTON-SET NO/PROG
245	3103 308 11600	BUTTON-SET STOP/PLAY
245	3103 308 11690	BUTTON-SET STOP/PLAY FW-R55
246	3103 308 11610	BUTTON-SET DSC/IS/VAC
248	4822 462 40683	FOOT RUBBER

Exploded view FW-R55 Front 2001-03-23

Exploded View FW-R55 Rear


283
Heat-shielding
285
Heat-shielding
M3x6 (4x) Washer
284
Mains Socket
Mains Board
(30-70W)
274
Power 2001 Board
(30-70W)
M3x12 (2x)
1005
279
269
M3x6 (4x)
M3x10
278
280
311
M3x6 (2x)
271
Audio Frequency Board
AF9
300
288
Digital In Board
(Part of Front Board)
302
Tuner Board
(ECO6)
M3x12
M3x12 (3x)
M3x12 (2x)
M3x12
M3x12
M3x12
M3x12 (2x)
M3x12

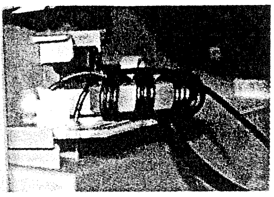
MECHANICAL PARTS

284	3139 114 71010	STOPPER HEATSINK
1005	4822 361 11161	KD1206PTS3, FAN

MECHANICAL PARTSLIST OF SET

MISCELLANEOUS

5001	3103 308 30620	TRANSFORMER MAINS . . . . .only for /37
5001	3103 308 30630	TRANSFORMER MAINS . . . . .only for /22
5001	3103 308 30640	TRANSFORMER MAINS . . . . .only for /21
5002	4322 020 90860	TOROID RING 23X14X7
8001	3139 110 35310	FLEX FOIL CABLE 16Pin 220mm (1:n)
8002	3139 110 35320	FLEX FOIL CABLE 11Pin 220mm (1:n)
8003	3139 110 35070	FLEX FOIL CABLE 6Pin 220mm (1:1)
8004	3139 110 34600	FLEX FOIL CABLE 7Pin, 280mm (1:1)
8007	3139 110 34870	FLEX FOIL CABLE 9Pin 220mm (1:n)
8008	3139 110 35090	FLEX FOIL CABLE 4Pin 340mm (1:n)
8009	3139 110 34740	FLEX FOIL CABLE 8Pin 180mm (1:1)
8010	3139 110 34600	FLEX FOIL CABLE 7Pin, 280mm (1:1)
8013	3139 110 33421	FLEX FOIL CABLE 13Pin 280mm (1:1)
8014	3139 110 35040	FLEX FOIL CABLE 12Pin 140mm (1:n)
8015	3139 110 35190	FLEX FOIL CABLE 5Pin 180mm (1:n)
8017	3139 110 34780	FLEX FOIL CABLE 4Pin 280mm (1:n)
8018	3139 110 35190	FLEX FOIL CABLE 5Pin 180mm (1:n)
8888	3139 110 35280	FLEX FOIL CABLE 10Pin 120mm (1:1)



Located on Digital In Board

ACCESSORIES

3103 308 11640	SPEAKER BOX ASSY **FW-R55** . . . . . . .not for /37
3103 308 11650	SPEAKER BOX ASSY **FW-R55** . . . . . .only for /37
3103 308 11670	SPEAKER BOX ASSY **FW-R33**
3103 308 53800	REMOTE CONTROL RC2833 . . .only for FW-R55
3103 308 53810	REMOTE CONTROL RC2831 . . .only for FW-R33
4822 303 50063	FM AERIAL
4822 320 11094	FW ANTENNA WIRE /37
4822 303 50082	AM FRAME AERIAL
2422 070 98151	MAINS CORD, EUROPE
2422 070 98152	MAINS CORD, USA
3103 309 23330	COMPAIR INTERFACE BOARD CDR2001